

PRESENTED BY

EDGAR M. CROOKSHANK, Esq.

SENIOR VICE-PRESIDENT
OF THE COLLEGE.

1925



Edgar March Crookshank,


SAINT HILL, SUSSEX.

THIS BOOK
IS THE PROPERTY OF THE
ROYAL VETERINARY COLLEGE
CAMDEN TOWN

V.C. LIBRARY.
CANCELLED



22500160731



Digitized by the Internet Archive
in 2020 with funding from
Wellcome Library

<https://archive.org/details/s2024id1378325>

WELLCOME INSTITUTE
LIBRARY

Coll.	WelMCmec
Coll.	ser
No.	1/1
	/020

THE
VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

VOLUME XXVIII., 1889.



London :

BAILLIÈRE, TINDALL & COX, KING WILLIAM STREET, STRAND.

PARIS: BAILLIÈRE. MADRID: BAILLY-BAILLIÈRE.

NEW YORK: WOOD & CO. CALCUTTA: THACKER, SPINK & CO.

MELBOURNE, SYDNEY, & ADELAIDE: GEO. ROBERTSON.

INDEX.

- Abortion in a Flock of Sheep, Infectious, 402.
 Acid Sublimate as an Antiseptic, 389.
 Actinomycosis Bovis, 14.
 Actinomycosis in Mankind, 101.
 Adams, J. Precocity in a Calf, 331.
 Adams, W. S. Study in Canine Pathology, 237.
 African "Horse-sickness," 252.
 Anæsthesia in the Horse, 99.
 Anæsthetics, Use and Administration of, 166.
 Anatomical and Physiological Observations on Horses in India, 76.
 Annual Meeting of the Royal College, 470.
 Anthrax, 217, 226.
 Anthrax, A Case of, and a Case of—What? 93.
 Anthrax in a Horse, 172.
 Anthrax in New South Wales, 101.
 Anthrax Inoculation in Italy, 464.
 Anthrax Inoculation in Russia, 464.
 Anthrax in Sheep, 104.
 Apoplexy in Cows, Parturient, 1.
 Army Veterinary Department, 28, 66, 132, 220, 306, 387, 463.
 Australian Sheep, 142.
 Bacillus of Cancer, A Supposed, 390.
 Bacteriology of Tetanus, 391.
 Berlin Veterinary University, 225, 389.
 Bird Surgery, 388.
 Black-leg in Cattle above Two Years of Age, 171, 243.
 Blood Contamination and Infective Disease, 181, 339, 409.
 Blood, Poisonous, 144.
 Bloodless Fish and Flesh, 468.
 Bloodless Neurotomy, Instruments for, 30.
 Border Counties Veterinary Medical Society, 447.
 Borrowed Matter, 69.
 Bovine Pleura-pneumonia, Virus of, 250.
 Bovines, Do they Perspire? 171, 310, 392.
 Bowels, Diseases of the, 45.
 Bowhill, T. Actinomycosis, 14.
 Brett, J. Apoplexy in Cows, 95.
 Brett, J. "Black-leg" in Cattle, 243.
 Buffalo Breeding, 141.
 Burke, R. W. Micro-organisms in "Surra," 25.
 Burke, R. W. Tropical Pityriasis, 397.
 Cammack, J. Virus of Bovine Pleuro-pneumonia, 250.
 Canine Pathology, A Study in, 237.
 Cardiac Clots, 227.
 Carter, H. V. Blood Contamination, 181, 339, 409.
 Central Veterinary Medical Society, 35, 120, 196, 360, 454.
 Chloroform, Note on, 11.
 Clifford, W. A. Enlarged Spleen, 174.
 College of State Medicine, 67.
 Contagious Pleuro-pneumonia, 68.
 Conti, G. Horse-sickness in Africa, 249.
 Corns in Horses' Feet, Are they Hereditary? 311.
 Corrections, 151, 228, 311.
 Cottell, A. B. Treatment of Tetanus by Antipyrin, 395.
 CORRESPONDENCE :—
 Annual Meeting of the Royal College, 470.
 Bloodless Fish and Flesh, 468.
 Borrowed Matter, 69.

- Bovines Perspire? Do, 310.
 Cardiac Clots, 227.
 Council? Are we Fairly Represented in, 228.
 Corns in Horses' Feet, Are they Hereditary? 311.
 Corrections, 151, 228, 311.
 Drugs to Quacks, Dispensing, 151.
 Happy Thoughts, 72.
 Heredity in Disease, 144.
 "Hippacea," 145, 228, 311.
 Hybrid between the Ox and Bison, 226.
 Inoculation, Protective, for Pleuropneumonia, 467.
 National Veterinary Association, 146, 229, 308.
 Nostrums, 229.
 Parturient Apoplexy, 144.
 Practice *versus* Theory, 471.
 Professional Progress, 70.
 Quackery, 69.
 Testimonial to Mr. Carlisle, 69.
 Council? Are we Fairly Represented in, 228.
 Cowpox in Denmark, 465.
 Crichton, A. M. Tumours in the Ventricles of the Heart, 19.
 Cruel Operations on Animals, 400.

 Dates, The Value of, 179.
 Dishorning of Cattle, 391, 403.
 Dogs for Military Purposes, 338.
 Dogs in Hospital, 390.
 Duke of Cambridge, Visit to Woolwich, 408.

 Eassie, F. Sanitation of Stable Buildings, 246, 322.
 Eastern Counties Veterinary Medical Association, 277.
 Ectopic Fœtation (Abdominal) in a Black-faced Ewe, 153.
 EDITORIAL:—
 Army Veterinary Department, 28.
 Cruel Operations on Horses, 400.
 Extinction of Contagious Pleuropneumonia, 175.
 Flesh of Tortured Animals Poisonous, 251.
 Horse-flesh for Human Food, 332.
 Production of General Anæsthesia in the Horse, 99.
 Elephants, Execution of Vicious, 143.

 English and Foreign Horses, 225.
 Epizootic Abortion, The Prevention of, 176.
 Ewe, Prolific, 142.
 Examinations of the Royal College of Veterinary Surgeons, 116.
 Examinations, R.C.V.S., 179.

 Facts and Fancies, 141.
 Fellowship Degree, 408.
 Female Veterinary Surgeon, 467.
 Ferguson, J. Ectopic Fœtation in Ewe, 153.
 Fire-arms, New, in Relation to Veterinary Surgery, 106.
 Firing by Pyro-puncture, 244.
 Firing, Remarks on, 170.
 Fitzwygram Prizes, 179.
 Flesh of Tortured Animals, Is it Poisonous as Food? 251.
 Flintoff, J. Operation for Thoroughpin, 94.
 Flintoff, T. Remarks on Firing, 170.
 Foal, Mouth Respiration in a, 393.
 Foreign Exports of Horses, 68.
 French Veterinary Schools, 226.

 Goodall, T. B. Hereditary Transmissions, 233.
 Goodall, T. B. Mouth Respiration in a Foal, 393.
 Gray, H. Black-leg in Cattle, 171.
 Gray, H. Do Bovines Perspire? 171.
 Greaves, T. Pathology of Roaring, 20.

 Happy Thoughts, 72.
 Haslam, A. J. Common Indian Skin Disease, 155.
 Heavy Losses by Abortion in Mares, 467.
 Hereditary Diseases, 313.
 Hereditary Transmissions, 233.
 Hereditary Unsoundness in Horses, 127.
 Heredity, 371.
 Heredity in Disease, 144.
 Hippacea, 145, 228, 311.
 Hopkin, T. Tuberculosis, 22.
 Horse Breeding, 68.
 Horse Doctor, A Lady, 308.
 Horse Sickness in Africa, 249.
 Horse Slings, Improved, 177.
 Horses in Early Times in Scotland, 67.

Horse-flesh as Human Food, Use of, 332.
 Horse-flesh, The Sale of, 307.
 Horses in the Time of Charlemagne, 67.
 Hybrid, A Form of, 98.
 Hybrid between the Ox and Bison, 226.
 Hydrophobia from Cat Bite, 225.

Iliac Artery, Rupture of, 23.
 Indian Skin Disease, 392.
 Infectious Abortion in a Flock of Sheep, 402.
 Interesting Case and Happy Recovery, 337.
 International Veterinary Congress, 422.

JURISPRUDENCE :—

Extraordinary Case, An, 133.

Killing Cows in India, 467.
 Knee, Dislocation of the, with Fracture of Some Small Bones, 10.

Lahore Veterinary School, 62.
 Lambs, Five at a Birth, 141.
 Lancashire Veterinary Medical Association, 126, 192, 426.
 Lanoline as a Hoof Ointment, 30.
 Laryngo-tracheotomy in Relation to Roaring, 121.
 Lincolnshire Veterinary Medical Association, 352.
 "Loco-poisoning," 389.
 Longevity of Microbes in Water, 388.

Macgillivray, A. E. Case of Anthrax, 93.
 Mal de Cadeiras, 261.
 Marriott, T. Anthrax in a Horse, 172.
 McCall, J. Value of Inoculation in Pleuro-pneumonia, as Disclosed by *Post-mortem* Examinations, 5, 79.
 Meredith, J. A. Rupture of the Right Internal Iliac Artery, 23.
 Meyrick, J. J. A Form of Hybrid, 98.
 Micro-organisms in "Surra," 25.
 Midland Counties Veterinary Medical Association, 49, 293.
 Montreal Veterinary College, 379.
 Moore, J. Use of Anæsthetics, 166.

Nails, Machine-made, 114.
 National Veterinary Benevolent Society, 119.
 National Veterinary Association, 146, 229, 308.
 North of England Veterinary Medical Association, 55.
 Nostrums, 229.
 NOTES AND NEWS :—
 Acid Sublimate as an Antiseptic, 389.
 Anthrax Inoculation in Italy, 464.
 Anthrax Inoculation in Russia, 464.
 Australian Sheep, 142.
 Bacillus of Cancer, A Supposed, 390.
 Bacteriology of Tetanus, 391.
 Berlin Veterinary University, 225, 389.
 Bird Surgery, 388.
 Blood, Poisonous, 144.
 Bovines, Do they Perspire? 392.
 Buffalo Breeding, 141.
 College of State Medicine, 67.
 Contagious Pleuro-pneumonia, 68.
 Cowpox in Denmark, 465.
 Cows, A Valuable Race of, 142.
 Dishorning of Cattle, 391, 403.
 Dogs in Hospital, 390.
 Elephants, Execution of Vicious, 143.
 English and Foreign Horses, 225.
 Ewe, A Prolific, 142.
 Facts and Fancies, 141.
 Female Veterinary Surgeon, 467.
 Foreign Exports of Horses, 68.
 French Veterinary Schools, 226.
 Gigantic Sheep, 143.
 Heavy Losses by Abortion in Mares, 467.
 Horse Breeding, 68.
 Horses in Early Times in Scotland, 67.
 Horses in the Time of Charlemagne, 67.
 Horses Wearing Spectacles, 388.
 Hydrophobia from the Bite of a Cat, 225.
 Indian Skin Disease, 392.
 Inoculation for Anthrax, 226.
 Killing Cows in India, 467.
 Lady Horse Doctor, 308.
 Lambs, Five at a Birth, 141.
 "Loco-poisoning," 389.
 Longevity of Microbes in Water, 388.

- Mayor of Tamworth, 307.
 Osler, Dr., 465.
 Pasteurism in Australia, 225.
 Pasteurism in Turkey, 391.
 Phenomenal Mass of Suet, 68.
 Protection of the Veterinary Profession in the United States, 464.
 Protective Inoculation against Hydrophobia, 226.
 Rabbit Pest in Australia, 307.
 Rabies in Alaska, 465.
 Rabies, Prevention of, by Pasteurian Inoculation, 225.
 Race-horse, An Expensive, 68.
 Royal Academy, 390.
 Royal Academy of Sciences of Turin, 140.
 Royal Veterinary College, 466.
 Sale of Horse-flesh, 307.
 Sanitary Science, Veterinary, in Russia, 466.
 Sheep, An Invasion of, 143.
 Sudation in the Dog, 226.
 Tetanus, The Origin of, 143.
 Tze-tze Fly and Man, The, 140.
 Wolves in America, Depredation by, 143.
- Obituary, 67, 132, 224, 307, 388, 464.
 Ontario Veterinary College, 379.
 Ophthalmia, 41.
 Osler, Dr., 465.
- Parturient Apoplexy in Cows, 1, 95, 144.
 Pasteurism in Australia, 225.
 Pasteurism in Turkey, 391.
 Pathological Society, 381.
 Pathology of Roaring, 20.
 Percussion, Appliances for, 264.
 Peters, A. Tuberculosis in a Dog, 394.
 Phenomenal Mass of Suet, 68.
 Pityriasis, Tropical, 397.
 Pleuro-pneumonia and Tuberculosis, 213, 217.
 Pleuro-pneumonia, as Disclosed by *Post-mortem*, Value of Inoculation in, 5, 79.
 Pleuro-pneumonia, Experiments in Queensland, 404.
 Pleuro-pneumonia, Extinction of Contagious, 175.
 Practice *versus* Theory, 471.
 Precocity in a Calf, 331.
- PROCEEDINGS OF SOCIETIES:—
 Border Counties Veterinary Medical Society, 447.
 Central Veterinary Medical Society, 35, 120, 196, 360, 454.
 Eastern Counties Veterinary Medical Association, 277.
 Examinations of the Royal College of Veterinary Surgeons, 116.
 Lahore Veterinary School, 62.
 Lancashire Veterinary Medical Association, 126, 192, 426.
 Lincolnshire Veterinary Medical Association, 352.
 Midland Counties Veterinary Medical Association, 49.
 Montreal Veterinary College, 379.
 National Veterinary Benevolent Society, 119.
 North of England Veterinary Medical Association, 55.
 Ontario Veterinary College, 379.
 Pathological Society, 381.
 Royal Agricultural Society, 65, 217, 291, 383, 462.
 Royal College of Veterinary Surgeons, 34, 186, 346, 423.
 Royal Counties Veterinary Medical Association, 40, 274.
 Royal Scottish Veterinary Association, 212.
 Scottish Metropolitan Veterinary Medical Society, 284.
 Veterinary Medical Association of Ireland, 114.
 Western Counties Veterinary Medical Association, 370.
 Yorkshire Veterinary Medical Association, 43, 202, 442.
 Professional Progress, 70.
 Prosecutions by the Royal College of Veterinary Surgeons, under the Veterinary Surgeons' Act, 110.
 Protective Inoculation against Hydrophobia, 226.
 Protective Inoculation for Pleuro-pneumonia, 467.
 Pulmonary Inflammation in Horses, 278.
 Pyro-puncture, Firing by, 244.
- Quackery, 69.
 Quacks, Dispensing Drugs to, 151.
 Rabbit-pest in Australia, 307.
 Rabies in Alaska, 465.

- Rabies, Prevention of, 225.
 Rabies, The Ptomaine of, 175.
 Race-horse, An Expensive, 68.
 Raymond, F. Note on Chloroform, 11.
 Rebougeon, M. The Mal de Ca-deiras, 261.
 REVIEWS:—
 Illustrated Horse Breeding. Captain Horace Hayes, 184.
 Lameness of Horses and Diseases of the Locomotory Apparatus. A. Liautard, 31.
 Report on Eruptive Diseases of the Teats and Udders of Cows in Relation to Scarlet Fever in Man. Professor Brown, C.B., 32.
 Roaring in Horses. Edward Cotterell, 33.
 Roaring in Horses (Laryngismus Paralyticus). G. Fleming, 265, 271.
 Trattato di Ostetrica Veterinaria. F. B. Roberto Bassi, 185.
 Trattato di Tecnica e Terapeutica Chirurgica Generale e Speciale degli Animali Domestici. Dr. Lanzillotti Buonsanti, 273.
 Tropical Diseases of the Horse. R. W. Burke, 185.
 Veterinary Surgeon's Diary and Note Book for 1889. E. E. Bennett, 32.
 Roaring, Cure of, 49.
 Roaring, Operations for, 333.
 Roaring, Pathology of, 20.
 Roaring, Results of Operation, 178.
 Robertson Memorial Fund, 150.
 Royal Academy, 390, 466.
 Royal Academy of Sciences of Turin, 140.
 Royal Agricultural Society, 65, 217, 291, 383, 462.
 Royal College of Veterinary Surgeons, 34, 186, 346, 423.
 Royal Counties Veterinary Medical Association, 40, 274.
 Royal Scottish Veterinary Association, 212.
 Royal Veterinary College, 466.
 Sanitation of Stable Buildings, 246, 322.
 Scarlatina and Milk, 335.
 Scottish Metropolitan Veterinary Medical Society, 284.
 Septicæmia, Parturient, Apoplexy a Form of, 95.
 Sheep, An Invasion of, 143.
 Sheep-pox, Natural Immunity from, in Breton, 176.
 Short, F. J. Dislocation of Knee, with Fracture of Some of the Small Bones, 10.
 Skin Disease, Common Indian, 155.
 Smith, F. Chemical Composition of the Sweat of the Horse, 73.
 Spleen, Enlarged, 174.
 Stable Buildings, Sanitation of, 246, 322.
 Steel, J. H. Anatomical and Physiological Observations on Horses in India, 76.
 Strangles, The Etiology of, 264.
 Sturge, R. Hereditary Diseases, 313.
 Sudation in the Dog, 226.
 "Surra" in Annam, 101.
 Sweat of the Horse, Chemical Composition of, 73.
 Swine Fever, 217.
 Tamworth, The Mayor of, 307.
 Testimonial to Mr. Carlisle, 69.
 Tetanus, Treatment of, by Antipyrin, 395.
 Tetanus in Animals, 260.
 Tetanus, The Origin of, 143.
 Thomas, A. H. Parturient Apoplexy in Cows, 1.
 Thoroughpin, Operations for, 311.
 Tropical Pityriasis, 397.
 Tuberculosis, 22, 51.
 Tuberculosis and Milk, 100.
 Tuberculosis in a Dog, 394.
 Tuberculosis in the United States, 105.
 Tumours in the Ventricles of the Heart, 19.
 Tze-tze Fly and Man, 140.
 Valuable Race of Cows, 142.
 Vindication, In, 112.
 Virus of Pleuro-pneumonia, 250.

Veterinary Honour, 142, 226.

Veterinary Medical Association of
Ireland, 114.

Veterinary Profession in the United
States, Protection of, 464.

Veterinary Sanitary Science in
Russia, 466.

Western Counties Veterinary Medi-
cal Association, 370.

Wolves in America, Depredation by,
143.

Yorkshire Veterinary Medical Asso-
ciation, 43, 202, 442.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JANUARY, 1889.

PARTURIENT APOPLEXY IN COWS—A FORM OF SEPTICÆMIA.

BY A. HARRISON THOMAS, M.B., C.M., B.SC., ETC., WHITTINGHAM,
PRESTON.

HAVING recently had an opportunity of observing an outbreak of Milk Fever that had assumed almost the proportions of an enzoötic, I was struck by the similarity in symptoms and *post-mortem* lesions to those found in cases of Septicæmia. Led by this resemblance, I examined, microscopically, various organs of several of the cases, and found that bacteria were universally present. Veterinary authors speak of two or three febrile conditions as occurring in cows shortly after parturition; but Parturient Apoplexy is usually held to differ from the other varieties in its pathology, although perhaps not greatly in its symptoms. At the same time, it is acknowledged that there is much need for further investigation with regard to it. Before speaking of the pathology of the disease, I will first describe, shortly, the chief symptoms and *post-mortem* lesions observed in some of the cases occurring this year.

Case I. Cow, No. 365, aged six years; calved June 29th at 2.30 a.m., labour being easy and natural, and the after-birth coming away freely. She gave 33 lbs. of milk this day, and seemed in perfect health when left for the night. Next morning at five was found lying on her side, quite comatose; this condition seemed to pass off to some extent at times during the day, as she made several efforts to rise; there appeared to be considerable headache, and she moaned and sighed occasionally all the day. There was no real paralysis, as she was able to move her limbs when disturbed. The udder was free from heat or swelling, and

there was little or no secretion of milk. The pulse was extremely feeble, being almost imperceptible, and she remained in this collapsed and prostrate condition all the day. Towards evening the coma became more profound, and the respiration shallower, and she died at 10.30. Thus the onset of the disease was within twenty-four hours after calving, and its duration was probably not much more than eighteen hours.

The *post-mortem* examination was made next morning. The subcutaneous connective tissue was congested; the heart uncontracted, and its cavities, together with the systemic veins, filled with dark, soft clots; lungs contained a few small areas of congestion; omentum had a number of ecchymosed patches, the largest being about 3 by $1\frac{1}{2}$ inches; at these places the omentum was much thickened, but there was no inflammatory exudation on its surface. Rumen full of food; intestines empty, and in some places the mucous membrane was congested; spleen and kidneys apparently normal; liver pale, soft, and friable. The interior of the uterus was quite healthy, and did not contain any remnant of the decidua; but around the cervix the connective tissue was much congested. The cerebral membranes were slightly congested, and the pia mater closely adherent to the cortex cerebri; the membranes of the spinal cord had one or two small areas of congestion.

Case II. Cow, No. 323, calved September 28th; made a good recovery, and gave twenty-nine to thirty-one pounds of milk daily, up to October 6th. She was apparently in her usual health on the evening of October 7th, but was found dead at five o'clock next morning. Thus the onset of the disease was delayed until the tenth day after calving; but it was rapidly fatal, death taking place within six or seven hours. It is worthy of note that this cow was down with Milk Fever ten days after her previous calving, but on that occasion, she recovered within a day or two.

At the *post-mortem* examination, there was found extensive disease of a similar character to that noted in the previous case; there were ecchymoses and petechial spots distributed universally throughout the connective tissues—around the root of the aorta, beneath the pericardium and endocardium, in the mucous membrane of the larynx and trachea, and in the intermuscular connective tissue of every part of the body. In the uterus was a small quantity of putrid fluid, and at the cervix uteri was an ulcer the size of a crown-piece.

Case III. Cow, No. 179, calved Oct. 13th at 9.30 a.m. She seemed to be quite well all the day, and when left for the night; but next morning at five was staggering about and occasionally falling: at seven she fell and was unable to rise; at this time she

seemed very excited, swaying and tossing the head, and was sweating profusely. In the afternoon she became quieter, but was not in any way comatose; there was much thirst, and she was able to raise her head a little in order to drink; extremities warm; pulse rapid but small, and almost imperceptible; respiration shallow and very rapid—120-130 per minute; vulva swollen and a little sanious discharge issuing therefrom. She became worse during the night and comatose, and died at one next morning. In this case the onset was about eighteen hours after parturition, and the duration about forty-four hours.

Post-mortem thirteen hours after. Putrefactive changes were advanced, although the weather was not warm; all the subcutaneous connective tissues were deeply congested; heart uncontracted and full of dark soft clot.

Case IV. Cow, No. 335, age eleven years; calved (twins) Oct. 24th, at seven a.m., parturition easy and natural. Seemed to be quite well when left for the night, but at three next morning was down; she got up occasionally until eleven, when she was no longer able to rise. She shortly became very drowsy, and was with difficulty roused to take nourishment, but there was no coma and no paralysis; respiration easy; pulse rapid and very feeble. This condition continued during the next two days, but she became comatose, and died on the third day, in the afternoon. Here the onset took place within four or five hours after labour, and the duration was about ninety hours.

Post-mortem held next morning. Although the weather was rather cold, putrefaction had advanced to a considerable degree; the thoracic and abdominal viscera were much decomposed, the kidneys being hardly recognisable, and the spleen a mere bag of putrid fluid. It will be observed that the symptoms in each of these cases were of the adynamic type—lethargy, deepening into coma, followed by death from Cardiac Syncope. There were six other cases during the year presenting similar symptoms; but the animals seemed to be less severely affected, and recovered in a day or so. There was not observed in any of the cases the sudden abolition of consciousness and power of motion indicative of hæmorrhage into the brain, or true apoplexy; nor did the symptoms resemble the apoplectic state consequent upon cerebral congestion. In apoplexy there is always paralysis, greater or less in degree, and more or less permanent, according to the seat and extent of the hæmorrhage, and the coma is accompanied by a slow full pulse; whilst in the cases under notice, there was no true paralysis at all, and the pulse in every instance was rapid, feeble, and almost imperceptible. In the *post-mortem* examination, also, the brain was carefully examined in one case and less closely in

another, and in neither was there found any trace of hæmorrhage or of active congestion; the membranes were passively congested to a slight degree, but this was only because of their participation in the general venous congestion, and perhaps, to some extent, also to gravitation. But as the symptoms during life resemble those found in Puerperal Septicæmia in the human subject, so also the *post-mortem* lesions are very characteristic—the dark imperfectly coagulated blood; the congestions of various organs, especially the lungs; the petechiæ and ecchymoses; the softening of the liver and spleen; and the rapid putrefaction. The fact that an animal having recovered from one attack is specially prone to a second attack, under similar conditions, is also in favour of its being of zymotic origin; and this view is further strengthened by the circumstance that, whilst some farms have perfect immunity from the disease, others have a succession of cases, as in the farm, where the above instances occurred, in which, out of seventy-one cows calving during the year, ten became affected with Milk Fever. I took portions of tissue from various parts of each case, as mentioned above, and after hardening them, examined sections microscopically; in all of them, including those of the spinal cord, I found vast numbers of bacteria present. There seemed to be two kinds, distinguishable chiefly by their size: a large variety of about the same length as *Bacillus anthracis*, but twice as broad; and a smaller kind. The former resembled very closely the bacilli of Davaine's Septicæmia, and the latter were similar to them except in size. Both kinds were granular in their interior, and seemed to have greater affinity for methylen-blue than for any other dye.

Although it cannot be claimed that the presence of bacteria in the organs after death is in itself absolute proof that they were the cause of the disease, yet this, together with the fact of the symptoms and *post-mortem* lesions being so characteristic of bacterial invasions, renders it at least highly probable that such is the nature of the affection.

As to the origin, this is probably to be found in the surroundings of the animal; as untrapped drains, accumulations of filth, insufficient ventilation, and perhaps sometimes in direct contagion, or infection from pre-existing cases.

As regards treatment, no remedy against Septicæmia has yet been found; the best hope lies in the careful nursing of the animal, so that its vital powers may be sustained until the fever is past.

THE VALUE OF INOCULATION IN PLEURO-PNEUMONIA, AS DISCLOSED BY *POST-MORTEM* EXAMINATION OF THE VICTIMS.

BY JAMES MCCALL, F.R.C.V.S., PRINCIPAL OF THE GLASGOW VETERINARY COLLEGE.

(Continued from vol. xxvii., p. 242.)

IN a prior number of this Journal I gave the details of an outbreak of Pleuro-pneumonia which had occurred in my practice in Glasgow, and where inoculation had been performed on the animals by Mr. Rutherford, of Edinburgh. The details as stated were a reprint from the epitome of evidence published and circulated by the Highland and Agricultural Society of Edinburgh. I also gave an epitome of the evidence given by Mr. Rutherford before the Departmental Committee of the Privy Council, in so far as it called my evidence in question, and as promised in the concluding sentence of the last article published in this Journal: "I shall (now) refer, in the first place, to the objections which Mr. Rutherford has taken to my evidence; and in the second place, I shall give in detail the history of a recent outbreak of Pleuro-pneumonia on the same premises; and I shall by *post-mortem* and other evidence prove that Mr. Rutherford's inoculation of Salmond's stock in February, 1887, not only did not arrest the spread of the disease at that time, but that it actually carried it on, and was the cause of a second outbreak in June, 1888."

MR. RUTHERFORD'S OBJECTIONS.

In answer to Mr. Bowen Jones: Do you agree with Mr. McCall in this: "According to Mr. Rutherford this animal was successfully inoculated, the tail was amputated, and it was considered safe"?—No.—You do not agree with Mr. McCall in that statement?—No, I do not.—Do you admit that the animal was inoculated?—Yes.—Do you admit that the animal contracted disease?—There I do not admit the correctness of Mr. McCall's statement.—The statement referred to by both gentlemen, in order to its comprehension, must be read in conjunction with a prior statement, and for accuracy I shall deal with it first, and it is as follows: "On 17th February I visited the byre, and found a cow showing symptoms of Pleuro. This was one of those inoculated on the 9th, and on *post-mortem* both lungs were found to be affected. Mr. Rutherford said the inoculation had not taken. The explanation in this case was that the animal had not taken the inoculation, and that it had been affected with the disease before inoculation. Mr. Rutherford saw it before being slaughtered." Now, did Mr.

Rutherford see that animal? and did he make the statement to me which I have attributed to him?—His memory cannot play him false, for it was the first animal which was taken out of the stock, exactly eight days after the first inoculation was practised by him on the herd.—I again affirm that he was present, and voluntarily made the statement I have placed to his credit, and he made it after he had examined the tail of each animal he had operated on the previous week. That the animal's lungs on *post-mortem* were found diseased is a fact, and I ask Mr. Rutherford to accept it as such, or show cause to the contrary, not only in this case, but in all the cases that are to follow. Now to the statement more particularly referred to, and it is, "On March 1st I required to take another cow and kill it, and I found both lungs bad. This animal was inoculated on the 9th (February). According to Mr. Rutherford it was successfully inoculated, the tail was amputated, and it was considered safe; so that if the cow of the 17th (found affected with Pleuro) was confirmatory of the fact that when an animal contracts Pleuro-pneumonia by the natural method it cannot be inoculated, the case of the 1st March was the very reverse. Both lungs were bad. With the others, it had the tail amputated, was considered free of disease, and still it succumbed to the disease. It was one of those in the byre when the disease first broke out. The tail of the animal was amputated on the 16th, and on the 28th I found the animal showing symptoms of the disease, and it was killed on 1st March."

That the facts are as I have stated, I again ask Mr. Rutherford to acknowledge or disprove. Regarding the inference I have drawn from his own statement, I consider it is a fair one, but like a few other statements he has made, it has no foundation in fact. Most positively he asserted to me that "when an animal contracts Pleuro-pneumonia by the natural method it cannot be inoculated," but his own practice on his own patients falsifies the statement, and I affirm that the acceptance or rejection of inoculation by a bovine animal is no part of its being free of Pleuro-pneumonia, or actually labouring under the malady at the moment of inoculation. But to return: Mr. Rutherford does "not admit the correctness of Mr. McCall's statement," and in answer to the next question, "Do you know the animal I allude to?" admits, "I do not. Now I will tell you why I do not know the animal. Mr. Salmond is a very old gentleman, not able to manage his own business. His son manages it for him." What inference Mr. Rutherford desires to be drawn from the reference he has made to the "very old gentleman and his son" I don't know, but when the reader is informed that the son is nearly as old as Mr. Rutherford, and quite as alive to his pecuniary interests, probably he will agree with me that the

son has no reason to feel proud of the compliment Mr. Rutherford has so publicly conferred on him.

When further crossed in his examination by Sir George Macpherson Grant regarding the same cow, Mr. Rutherford admits that it was inoculated by him, but that it was not successfully inoculated. That is a truth, but it was unknown to Mr. Rutherford when he gave the finishing-touch to his operation by docking the tail. That animal was affected before Mr. Rutherford inoculated it, and he was in complete ignorance of the presence of the disease.

Chairman: You said if you inoculated an animal with Pleuro-pneumonia in its system the disease would develop itself in three weeks?—Yes, it would; generally earlier.—Will Mr. Rutherford be kind enough to state the proof for fixing the period within three weeks, and at same time reconcile it with the further statement he has made?—I only inoculate those that I am satisfied are not diseased. All suspects must go down. Is it true, then, that in Mr. Salmond's outbreak in Glasgow, referred to by Mr. McCall, that although you inoculated on February 9th, cases occurred as late as the 9th of April, two months after inoculation?—That statement does not convey to you the actual facts of the case. It is an incomplete statement, very incomplete indeed, and a very misleading statement. There were actually three lots of cows in that man's premises; that is to say, there was the lot that I inoculated; there was a lot that was left simply because they were unfit for inoculation, and were subsequently inoculated; and there was the lot that he purchased in, to be inoculated immediately after the outbreak was reported.

Errors in judgment we all make, and in the drawing of inferences there is room to honestly differ, but in inventing and disseminating "a very misleading statement" there is no excuse. It is a dastardly act, and I shall now attempt to purge myself from the imputation. In my evidence I am reported to have said, "On 9th February Mr. Rutherford inoculated Salmond's cows, and also the cow in calf and the two yearling heifers belonging to me. He first of all took the temperature of all the animals, to see whether they were in health. On completing his examination he said there was only one above the normal, etc. I said, 'Are you satisfied that you have got all the others fit subjects for inoculation?' He said, 'Yes.' Mr. Rutherford inoculated all the other animals that he considered fit subjects, but there were several cows he did not inoculate, as they were about to calve or had calved within eight days. On the same day (9th February) Mr. Salmond said, 'If you will allow me, we will buy some cows and put them into the byre,' etc. He purchased three cows at the Wishaw sale, and five at the Paisley sale, for the purpose of being inoculated and thoroughly protected."

I now call upon Mr. Rutherford to point out and explain what is very misleading in that statement. Mr. Rutherford says, "There actually were three lots of cows in that man's premises—the lot that I inoculated, the lot that was left, and were subsequently inoculated, and the lot purchased to be inoculated," and in making these statements he only reiterates what I had said, and I therefore call upon him to point out what is misleading in my statement or withdraw the charge.

Chairman: I want to ask you whether any of the cattle inoculated on February 9th showed the disease on April 9th.—Yes, they did; but they were reported by me not many days after the inoculation to the owner. They were pointed out by me to the owner, for him to do his part; that is to say, bring them to Mr. McCall's notice. He never did so, and I do not think Mr. McCall was attending the byres as closely as I was. I was in the byres every other day, almost.

Leaving these graceful and generous remarks to be dealt with hereafter, I shall now enumerate the order in which the cows after inoculation presented symptoms of Pleuro-pneumonia and required to be slaughtered:—

No. 1 cow, slaughtered February 17, inoculated February 9, 1887.									
" 2	"	"	March	1,	"	"	"	9,	"
" 3	"	"	"	4,	"	"	"	9,	"
" 4	"	"	"	4,	"	"	"	9,	"
" 5	"	"	"	7,	"	"	"	17,	"
" 6	"	"	"	7,	"	"	"	17,	"
" 7	"	"	"	15,	"	"	"	9,	"
" 8	"	"	"	22,	"	"	"	17,	"
" 9	"	"	April	4,	"	"	"	16,	"

Also on 24th and on 29th of February.

The last cow referred to is one of the three cows purchased at Wishaw sale to prove the value of preventive inoculation, but strange to say, it was placed in the byre, and thus allowed to inhale the virus for eight days prior to inoculation. Can Mr. Rutherford reconcile this case, and for that part of it any of the other cases, with the following statements which he has made? "Successful inoculation confers immunity. I mean by successful inoculation that the operation shall be carried out in a proper manner. I have reason to know that it is very improperly performed. I have never known an animal successfully inoculated succumb or even contract the disease. Inoculation arrests it at that stage (incubation), for at that time there is no lung lesion. It is absolutely necessary that your operators are thoroughly up in their work, but there would be difficulty in finding such gentlemen at present. I would appoint them only by examination. My experience enables me to detect quite well what are the appearances

of a successful inoculation, but the fear is of inoculation falling into wrong hands. If animals are inoculated, and still take the disease, it is the fault of the operator"!

While waiting Mr. Rutherford's reply I may be allowed to say that surely he never intended these remarks to be put in print and scanned by his professional brethren, for they are not only a direct insult to them, but a tissue of "very misleading statements."

As an operation, inoculation in Pleuro-pneumonia is one of the most simple the veterinarian has to perform. Professor Williams, in his examination, is reported to have said, "Anybody could inoculate," and certainly he cannot be much of a veterinarian who cannot introduce a seton to a cow's tail. So much for the operation; now for the result. Mr. Rutherford says, "If animals are inoculated, and still take the disease, it is the fault of the operator." Is this penned in ignorance, or with the desire to mislead? In either case it is "a very misleading statement."

The two principal factors in the success of the operation are, firstly, the immunity of the animal to be operated on from an attack of Pleuro-pneumonia by the natural method, in other words, free of infection; secondly, a pure and living virus wherewith to inoculate the animal; and neither Mr. Rutherford nor any other man in the veterinary profession knows at the time of operation, nor for some weeks after, whether or not he has had these two factors. Can Mr. Rutherford recognise an animal in the incubative stage of Pleuro-pneumonia? or can he, with the aid of the microscope, recognise the Pleuro virus from any other virus, or say that its organisms are alive or dead? No, he cannot, and yet he has the audacity to assert that "if animals are inoculated, and still take the disease, it is the fault of the operator."

If it is so, how is he to reconcile his failures in those instances I have enumerated, and in those yet to follow? No professional fee can be due for performing an operation where failure "is the fault of the operator," and it would be interesting to know if Mr. Rutherford has always acted in conformity with the doctrine.

Now to the charge made against me of want of attention and undue delay in removing affected animals. It is true the owner did not desire me to remove his cows; nay, I think I may venture to assert that his desire was in the opposite direction, and I have no hesitation in charging Mr. Rutherford with the same desire.

In the performance of my duties as inspector under the Act I neither ask nor expect assistance nor guidance from the owner of the stock which has been placed under restrictions. It is my duty to guide and direct, and I have always done so, and I ask no one to share the responsibility; but was I remiss in the removal of the affected cows? By a reference to the table of removal of animals

it will be seen that one cow (and the first animal after inoculation) was removed for slaughter on 17th February, another on 1st of March, other two on 4th March, other two on 7th March, one on the 15th, and one on the 22nd of March, and lastly one on 4th April.

(*To be continued.*)

DISLOCATION OF THE KNEE, WITH FRACTURE OF SOME OF THE SMALL BONES.

BY F. J. SHORT, A.V.D., ALDERSHOT.

ON the 26th of June last, about 9.30 p.m., I was called to see troop mare G 53, 18th Hussars, and on arrival at the stable about an hour after, I found her standing outside with the off fore leg flexed and foot raised, the toe only touching the ground now and then. From the knee downwards the limb was swollen to double its normal size, and extending four inches upwards from the knee, in front of the radius, was a puffy swelling, evidently consisting of extravasated blood. That part of the limb below the knee could be moved about to a certain extent in any direction when the lower extremity of the radius was made a fixed point. On manipulation, the trapezium was found detached from the lower row of carpal bones, but still attached to the upper row, these latter being adherent and fixed to the radius. The lower row, with the metacarpus, was fixedly locked in such a position that the inferior extremity of the radius, along with the upper row of carpal bones, was projecting a good inch to the outside of the lower row and metacarpus. Traction and manipulation in attempting to reduce the dislocation caused most intense pain, and it was then that *cripitus*, pointing to fracture, was distinctly heard, and it was at once decided to destroy her.

Post-mortem Examination.—Abrasion of skin on middle of outer face of metacarpus. Sections of the swellings above and below the knee showed them to have been the result of most extensive hæmorrhage. There was rupture of and effusion of blood into the sub-carpal ligaments and those connecting the posterior face of the carpal bones, and also of the lateral ligaments and those connecting the inferior face of trapezium to the metacarpus, and a considerable portion of the outer splint bone was torn away, with the ligaments attached. The projection on the posterior face of the os lunare was broken off, as well as the upper and inner portion of the scaphoid, *i.e.*, that facing the lunare. The upper row of carpal bones projected forward an inch and a half over the lower row, and also to the extent of two inches to the outside, so that the inner half of the lunare was placed well over the unciform.

This case is, I think, unique and worth recording, owing to its

rarity and the peculiar circumstances attending its cause. The mare being found cast in her stall with head below the iron manger and hay-rack, the collar-chain wound round the injured limb, and a patch of whitewash on her nose, may indicate that in rearing to free her leg from the chain, the sudden jerk caused by the leg stopping her from rearing further, snapped the knee when falling, when probably at the same time the foot came into violent contact with the ironwork.

NOTE ON CHLOROFORM.

BY F. RAYMOND, F.R.C.V.S., F.R.M.S., ETC., ARMY VETERINARY
DEPARTMENT.

A YEAR ago, I had the honour to read a paper before the Central Veterinary Medical Society of London upon this subject of Chloroform. In those days I was in the habit of administering chloroform with a sponge to one nostril, under a towel; and if I recollect rightly, I laid great stress in my paper upon the necessity for freely diluting the vapour with air. Since then I have had cause to alter my opinion; for I find that if small doses are administered with very little air the results are much more satisfactory, particularly if Carlisle's chloroform-bag is used. Of this apparatus I wish to speak in terms of great praise, and would strongly recommend it to chloroformists. There is just one improvement which might be made—namely, the perforated zinc plate, which covers the sponge-box, I think should be provided with hinges, so that the sponge can be removed and cleansed. The objects gained by using the bag with small doses are—(1) Anæsthesia is produced very rapidly indeed; (2) the animal recovers more quickly; (3) the after effects are very unimportant (under the old system the patient was generally more or less upset visibly for a day or two); (4) the new method is more economical. I record below the temperature, pulse, and respiration of sixty cases in which chloroform was administered, and the animals underwent very severe operations. The record is for the first five days after the chloroform was administered. I may add that I have taken the temperature of ninety horses at present under my charge as surgical cases, and I find the average to be $99\frac{4}{5}^{\circ}$ F. It should also be stated that my record comprises horses of all sorts, from the heavy wheel-horse to the thoroughbred racer.

I am aware that some authorities rather discourage the administration of chloroform, on the ground that it frightens the horse more than the operation does. This is not my opinion; but I am willing to admit that a little practice may be required to get the patient quickly under the influence of the anæsthetic, and to know the exact moment when enough has been given for the operation about to be performed.

SIXTY OPERATIONS UNDER CHLOROFORM.

Progressive Number.	Dose of Chloroform.	Following Day.			2nd Day.			3rd Day.			4th Day.			5th Day.			REMARKS.
		Temp.	Pulse.	Res.	Temp.	Pulse.	Res.	Temp.	Pulse.	Res.	Temp.	Pulse.	Res.	Temp.	Pulse.	Res.	
1	3 oz.	101.4	40	16	101.4	40	16	100.4	normal	normal	100.2	normal	normal	100.1	normal	normal	Chloroform given on a sponge, applied to one nostril, with a towel to cover it.
2	3 "	102.0	44	16	101.1	42	14	100.4	normal	normal	100.2	normal	normal	100.1	normal	normal	
3	3 "	100.1	38	15	101.3	35	15	100.4	35	15	100.2	normal	normal	100.1	normal	normal	
4	3 "	100.3	normal	normal	100.2	normal	normal	not recorded	normal	ded	100.4	normal	normal	100.2	normal	normal	Carlisle's bag used in this and in all other cases.
5	3 "	100.2	40	15	100.2	normal	normal	100.3	42	16	100.2	36	15	100.1	normal	normal	
6	3 "	101.3	normal	normal	100.2	normal	normal	100.2	normal	normal	100.2	normal	normal	100.1	normal	normal	
7	3 "	101.4	42	17	102.3	44	14	101.4	42	14	100.3	42	14	100.3	normal	normal	A very severe operation.
8	1 1/2 + 1 1/2	101.2	38	15	100.1	normal	normal	100.3	normal	normal	100.2	normal	normal	100.1	normal	normal	
9	1 1/2 + 1 1/2	102.0	60	30	102.2	40	20	101.3	40	24	101.2	38	18	100.1	38	16	
10	1 1/2 + 1 1/2	101.4	38	16	101.4	38	16	101.2	38	16	101.2	38	16	100.2	38	16	6th day normal all round.
11	1 1/2 + 1 1/2	100.4	44	24	100.3	42	20	100.1	40	18	101.1	40	16	100.1	38	16	
12	1 1/2 + 1 1/2	101.1	42	20	100.4	41	18	100.2	40	16	100.2	40	16	100.2	40	16	
13	1 1/2 + 1 1/2	101.3	44	21	101.1	42	18	101.0	40	16	100.2	36	16	100.1	40	16	
14	1 1/2 + 1 1/2	101.3	42	18	101.1	40	16	100.2	38	16	101.0	36	16	100.3	36	16	
15	1 1/2 + 1 1/2	101.2	42	18	101.2	40	18	101.2	40	16	100.4	40	16	100.2	38	16	
16	1 1/2 + 1 1/2	101.2	48	18	101.0	44	18	100.3	44	16	100.1	42	16	100.2	normal	normal	
17	1 1/2 + 1 1/2	101.2	42	17	100.3	40	16	100.2	40	16	100.1	40	16	100.1	40	16	
18	1 1/2 + 1 1/2	101.1	41	16	101.0	40	18	101.0	40	16	102.0	40	16	100.1	38	14	
19	1 1/2 + 1 1/2	100.3	42	16	100.1	40	16	100.0	40	16	100.2	normal	normal	100.1	normal	normal	
20	1 1/2 + 1 1/2	101.3	44	18	101.1	42	18	100.4	40	16	100.2	38	16	100.1	38	16	
21	1 1/2 + 1 1/2	101.3	44	18	101.1	40	18	101.0	40	16	100.4	40	16	100.2	38	14	
22	1 1/2 + 1 1/2	101.3	44	18	101.1	40	18	101.0	40	16	100.1	36	14	100.2	normal	normal	
23	1 1/2 + 1 1/2	101.2	44	18	101.0	42	16	100.4	40	18	100.1	40	16	101.0	normal	normal	
24	1 1/2 + 1 1/2	101.4	42	18	101.1	40	18	101.1	40	18	101.0	40	16	101.0	normal	normal	
25	1 1/2 + 1 1/2	101.2	42	18	101.1	40	16	100.4	40	16	100.2	38	16	100.1	normal	normal	
26	1 1/2 + 1 1/2	101.2	42	18	101.1	40	16	100.4	40	16	100.2	38	16	100.1	normal	normal	
27	1 1/2 + 1 1/2	101.1	40	18	101.1	40	16	101.0	40	16	100.2	38	16	100.1	normal	normal	

A very nervous thoroughbred. Gave
Tinct. Opii. 4 oz., before casting,
to keep her quiet.

28	I 1/2	18	100.3	42	16	100.1	40	16	normal	normal	normal
29	I 1/2	18	101.2	48	16	101.0	40	16	normal	normal	normal
30	I 1/2	22	101.2	48	18	101.0	40	16	100.2	40	16
31	I 1/2	16	100.3	48	16	normal	normal	normal	normal	normal	normal
32	I 1/2	20	101.3	48	26	103.0	58	22	102.2	58	20
33	I 1/2	16	101.2	44	16	100.3	42	14	normal	normal	normal
34	I 1/2	18	101.0	48	16	100.2	46	16	100.2	40	16
35	I 1/2	18	101.1	48	18	100.2	44	16	100.1	42	16
36	I 1/2	18	100.2	48	16	100.3	44	16	100.1	42	16
37	I 1/2	18	101.3	46	16	101.1	42	16	100.2	40	16
38	I 1/2	18	101.3	48	16	100.3	40	16	100.2	40	16
39	I 1/2	18	101.3	44	16	100.1	40	16	normal	normal	normal
40	I 1/2	19	101.4	50	16	101.1	44	18	100.4	42	16
41	I 1/2	18	101.3	49	16	100.1	40	16	normal	normal	normal
42	I 1/2	18	102.2	48	16	100.3	40	16	normal	normal	normal
43	I 1/2	18	101.2	48	14	101.0	44	14	100.4	44	14
44	I 1/2	16	100.2	48	16	100.1	44	14	100.4	44	14
45	I 1/2	14	101.2	40	14	normal	normal	normal	normal	normal	normal
46	I 1/2	16	101.1	48	16	100.4	44	14	100.1	40	14
47	I 1/2	18	101.3	46	16	100.2	42	16	100.0	40	14
48	I 1/2	16	101.2	48	16	normal	normal	normal	normal	normal	normal
49	I 1/2	16	100.4	46	16	100.2	44	14	100.0	40	14
50	I 1/2	18	101.4	48	16	101.0	46	16	normal	normal	normal
51	I 1/2	16	100.1	46	16	normal	normal	normal	normal	normal	normal
52	I 1/2	18	101.4	50	16	101.2	46	14	100.1	40	14
53	I 1/2	18	101.2	48	16	101.0	42	14	100.2	40	14
54	I 1/2	16	102.2	48	16	101.2	40	14	101.1	40	14
55	I 1/2	16	102.1	48	16	101.2	42	16	101.0	42	16
56	I 1/2	16	102.0	48	16	101.0	44	16	100.3	42	14
57	I 1/2	18	101.4	50	16	101.0	44	14	100.1	40	14
58	I 1/2	18	101.2	48	16	101.0	42	14	100.2	40	14
59	I 1/2	16	102.2	48	16	101.2	40	14	101.1	40	14
60	I 1/2	16	101.3	50	14	normal	normal	normal	normal	normal	normal

“Normal” in this record signifies that the temperature was not above 99⁴/₅ Fahr., nor the pulse over 38 beats per minute. The high temperature in case 32 on the second day was related to surgical symptoms.

ACTINOMYKOSIS BOVIS IN THE STATE OF CALIFORNIA.

BY THOMAS BOWHILL, M.R.C.V.S.

CONSIDERING the importance of this disease to veterinary surgeons, I will trespass upon the valuable space of the VETERINARY JOURNAL to give a description of the manner in which I have found Actinomykosis Bovis occur in the State of California. The remarkable prevalence of the malady induced me to keep a record of the number of cases met with during the last twelve months. In this time I have seen over 200 well-defined cases ; some I saw at the slaughter-houses of San Francisco, whilst inspecting veterinary surgeon to that city. I also saw it in the fields in men's herds, whilst inspector of the United States Bureau of Animal Industry. As to the remarkable number of cases met with,—in one herd of 200 cattle there were fifteen well-defined cases, with others of dubious origin. When the owners were informed of the infectious nature of this malady, they laughed, and said it was only a wild oat which had gained admittance through the mouth, and set up a suppuration. To convince those sceptics, I asked them to kill some of the affected cows and steers, and on section of the bones of the jaw, I was able to show them the honeycombed appearance, the spaces filled with the yellow nodules of the fungus. In other cases, when the lesion lay in the parotid and submaxillary region, I removed some of the tumours, and section of these revealed the white matrix studded with the little nodules of a fatty appearance, as described by Bollinger ; whilst other parts of the same tumour were filled with caseous matter, some parts of which had undergone calcareous degeneration. Finding no wild oats convinced those gentlemen that the disease was other than a mere swelling due to the above irritant.

In this State, the disease manifests itself in the following manner:—(1st) Affecting the lower jaw and commonly known as "Big Jaw" or Osteo-sarcoma ; (2nd) Affecting the superior maxilla, and causing a bulging a little below the eye ; (3rd) Affecting the parotid gland ; (4th) Affecting the submaxillary gland, filling the submaxillary space ; (5th) Occurring in the retro-pharyngeal lymphatic glands, and commonly known as "Clyers" ; (6th) As an Epulis growing out from the gums. In one case, I found the fungus in the lungs, as tumours in the connective tissue, and as small hard lumps in the integument of the facial region.

I have never yet seen a case where the tongue was primarily affected or implicated. I have operated in numerous cases, as has also Mr. Fitzgerald, M.R.C.V.S., of this city. In the case on which we operated together, and which I am about to describe, the

animal was a Hereford cow, which was affected by the form of actinomykosis known as "Clyers." You could hear the animal breathing with a loud roaring noise at the distance of twenty yards, and with a loud laryngeal cough, accompanied by frothing at the mouth. On manipulating the tumours, we found they were of an immense size; there being two, if not three. Owing to the great distortion of the surrounding structures, it was difficult to form an opinion.

Having informed the owner that we thought it was a case of Actinomykosis, and, provided there were no systemic lesions, we might perhaps operate with success, he consented. We threw the animal, and made an incision about five inches long through the skin at the inferior portion of the parotid gland, and boring through the connective tissue with our fingers, we exposed the Clyer encased in a tough capsule. We next put a seton needle through the Clyer, carrying a strong ligature, and tore it away from the surrounding structures with the fingers, one pulling on the ligature, the other tearing it away. It is a very difficult matter, and one at which you will perspire freely, as the attachments are very strong. The same operation was performed at the other side, a new incision being made, as it was found impossible to reach the second tumour through the first opening. The first tumour weighed 3 pounds; the second, 2 pounds—5 pounds in all. In Dr. Fleming's valuable treatise on this disease, he mentions the fact that a German operator removed these tumours by cutting through the median line of the pharynx. I have never found the tumours small enough to be removed in this manner. The wounds were dressed with a solution of carbolic acid, and they healed rapidly; but in about five weeks' time we were astonished to find another one growing, and with such great rapidity, that we were inclined to think that it was developed from the third tumour, which we could not find, although at first we suspected its presence. The tumour now grown was in the near side. We again operated, and removed another large tumour about four pounds in weight. After this removal the animal was very weak, but in a few days its breathing was better, and it improved rapidly. We now thought that we had seen the last of them, but we were disappointed; for in two months another one made its appearance on the off side. The cow being within six weeks of calving, we could not operate at once. She calved a fine bull calf. About fourteen days afterwards, at the owner's urgent request, we again removed another tumour in a similar manner, this one being the largest of any; but as it was punctured before removal, in order to get it out, it is impossible to give the correct weight. It contained quite a pint of thick pus and *detritus*; the walls of the capsule were almost

two inches thick, and thrombosed vessels passed through it, crossing the centre. The wound in this instance was dressed with a strong solution of Cupri Sulph. for a week, and then with a solution of Little's Soluble Phenyle. The animal was sold about three months afterwards, with her calf, very little swelling remaining, and I have now lost trace of the case.

Microscopical examination of sections of these tumours taken from this animal, stained with picro carmine and alum carmine, revealed in every instance the presence of the *Actinomyces* fungus.

The next cases which came under my notice were some old cows at the San Francisco slaughter-houses, which were condemned by a local veterinary surgeon, who graduated as an ostler, and gave as his diagnosis "Caries of the bones of the head." On the day following the publication of the above diagnosis in the morning papers, there happened to be the first General Meeting of the State Veterinary Medical Association. The matter was brought before the Society, and we asked permission to examine the cattle on our own account without any remuneration. Permission being granted, we proceeded to the place where the cattle were impounded, and I think a more miserable, dilapidated lot of animals could not be found. Some were affected in the bones of the head, some in the subcutaneous tissue around the neck and face; others, again, in other parts of the body; and from the amount of marasmus, accompanied by the peculiar cough of some, I have no doubt that they were cases of Systemic Actinomykosis, although the cough might be due to Tuberculosis. We obtained sections of the tumours of some of those animals; they all contained the characteristic *Actinomyces* fungus. I may add that those cattle were intended to be slaughtered for consumption in this city.

The next case that I consider worthy of special attention occurred in a fine Jersey cow. The tumour in this instance was situated at the inferior extremity of the parotid gland. I excised this tumour, and dressed the wound with a solution of Cupri Sulph.; it healed rapidly, but it again appeared at the superior end of my last incision, in about thirty days. I again removed it, treating it as before, thereby hoping to have seen the last of it. I was disappointed, however, for it again appeared—just two inches from the base of the right ear—about one inch higher each time. This time I removed a considerable part of the surrounding structures, going well into the substance of the parotid gland. I was now annoyed at its recurrent nature, and on the animal being allowed to get up, I threw a handful of Cupri Sulph. into the cavity, and continued to dress it with a strong solution until the wound was healed. Microscopical examination of all these tumours revealed the characteristics of the *Actinomyces* fungus.

I heard of no bad results from this case till the end of four months, when I was again summoned, and to my utter astonishment found the tumour larger than ever, involving the whole parotid gland, and as hard as a rock. The inferior extremity of the gland pointed downwards and outwards into the submaxillary region. I threw the animal, and rolled her over on her back, extending the head straight out, and made a longitudinal incision through the skin and subcutaneous tissue, when the point of the tumour suddenly bulged out. I passed the string through, as in the other cases, and called a farm hand to my assistance to pull on it. I tore away with my fingers at the surrounding tissues, and lacerated Steno's duct; working gradually up, I removed the tumour as far as the base of the ear, and, after considerable pulling and tearing with the fingers, removed the entire parotid gland. There was no hæmorrhage to speak of, owing to the schirrous condition of the entire structure, the vessels being entirely obliterated. I continued the sulphate of copper treatment as before, and the animal on last inspection presented no enlargement, except a slight thickening of the skin at the point of incision. Microscopical sections of this tumour revealed in the acini of the gland the presence of the characteristic *Actinomyces* fungus.

The next case I operated on was simply to enable a valuable cow to live long enough to have a calf, as she was affected with an epulis. I cut a hole through the cheek of the animal and introduced the ecraseur, not being able to do so through the mouth, owing to the instrument being too short. The neck of the epulis was about $1\frac{1}{2}$ inches thick, and it weighed $\frac{1}{2}$ lb. The bone of the jaw was also affected at the point of attachment of the epulis. The animal was ordered to be destroyed after calving.

Mr. Fitzgerald, M.R.C.V.S., informs me that he has again successfully removed some tumours from the retro-pharyngeal space of a cow, and has obtained good results, although they were of an actinomykotic origin, and there has been as yet no return.

I have excised these tumours in numerous other instances, mention of which would only be repetition, as in every instance I pursued the same course; but in all cases on which I have operated, they have only been those of clyers and loose tumours in connective tissues, as I have found it entirely useless to operate when the bones are affected. I have only in such instances operated when the owner wished to save a calf, and promised to isolate the animal; because the State Board of Health orders all tubercular animals, and those affected with *Actinomykosis*, to be condemned as unfit for consumption, and also for dairy purposes, and empowers the City Veterinary Surgeon to seize and destroyed them.

Whilst acting in this capacity, I in one month seized ten head

of cattle (in three dairies) affected with Actinomykosis, besides others at the slaughter-houses.

I had occasion, whilst inspecting for the United States Government, to visit some ranches in the southern part of the State, during the last outbreak of Texas Fever and Anthrax, and I found a number of cases of Actinomykosis on one ranch. In some of these the lower jaw was distorted to one side at least three inches, and the right ramus of the inferior maxillary bone of one of these animals weighed ten pounds.

Pathology.

Concerning the pathology of this disease, I can only say that that given by Dr. Fleming in his treatise on Actinomykosis, exactly corresponds with the structural and microscopic examinations of the tumours as made by myself. They consisted of granulation tissue, studded here and there with the fungus and numerous epitheloid cells.

I have much pleasure in sending a photograph of one of the microscopical sections; it was taken by Dr. Hopkins, United States Army, Blackpoint, San Francisco, to whom I am indebted for a correct micro-photograph of a section of one of the tumours removed by me from the Jersey cow, which case I have mentioned above.

Mode of Access.

As to the mode of access, Dr. Fleming states that it is extremely probable that it enters in the form of spores through a wound, abrasion, fissure, or even by the delicate mucous follicles of the membranes lining the lips, mouth, pharynx, and nostrils. I agree with Dr. Fleming in stating that this is the mode of access; for it is well known that horned cattle hook each other invariably at the angle of the lower jaw, and thus a solution of continuity taking place, the spores can gain access. Again, the cattle in this country are fed on straw and other dry and hard fodder, numerous herds being turned on to the stubble fields, and as Dr. Fleming mentions, straw may be mouldy and infested with various vegetable parasites; the said straw acting as a vehicle for the transmission of the fungus.

In conclusion, I may state that those cases enumerated are but a few of the many I have seen, and one phenomenon which I cannot understand is, that I have yet to find or hear of a single case in which the tongue was implicated.

TUMOURS IN THE VENTRICLES OF THE HEART, CAUSING UNUSUAL SYMPTOMS.

BY A. M. CRIGHTON, M.R.C.V.S., LISBURN, IRELAND.

THIS was a large brown horse, about thirteen years old, and previous to seeing him I was informed that he had been rather dull for some time, and had had an attack of Colic, which, however, only lasted a short time. When at work afterwards, he seemed dull and unwilling to move as freely as he used to do; he, however, ate his food as well as usual. He was a very fat horse, and had always been well cared for, although he was pretty hard worked at intervals. He had not done much work for three or four days before he took his last illness, as his owner thought the rest might do him good. The symptoms were as follows: On December 4th, on seeing him early in the morning, I found him presenting evidence of abdominal pain, such as lying down and getting up again. Temperature 101° , pulse 68, irregular, and strong and full; conjunctival membrane slightly icteritious; quick and laboured breathing; lies down for a little, quietly, then arises and walks up the stall to the manger, throws up and down his head for six or eight times in quick succession, then walks back to the end of his rope and repeats the same act, and again walks up the stall to do the same thing, all the time perspiring freely. I administered an anodyne draught, and left one to be given in my absence. Farther on in the day, on seeing him, I noticed that he was perspiring very freely and seemed in a far more excitable state, prancing more up and down the stall, throwing up and down his head as before, the breathing more accelerated and laboured, and the nostrils dilated; the pulse was more intermittent; still showing signs of pain, looking round at his sides, and passing a small quantity of urine at intervals. On trying to drench him with his head elevated, he got into a most excitable state for some time afterwards, so that we had to abandon drenching him altogether, as he could not bear his head to be elevated at last. The higher we raised it the more he became excited, and seemed to be nearly suffocated. I could give him the medicine far more easily in bolus, as we had not to elevate his head; and this would show that the spine and brain were not affected. I gave him some more anodyne medicine and a hypodermic injection of atropia and morphia, and applied a blister to his sides. On again seeing him on the same day in the evening, the symptoms were more intensified than before, and he was in such an excitable state that it was dangerous to go near him, the pains coming on now at intervals, and I could get little time to examine him till they decreased. I, a short time afterwards, got an oppor-

tunity to take the pulse and listen to the heart-beats, as I was afraid it was implicated in some way, but I could only hear very indistinctly, as he was so fat, and also so restless; but I could perceive that the sounds were of a "muffled" character, more resembling a kind of dull thump than the natural beat; the pulse was still intermittent, and 80 or 82 per minute. The impulse of the heart could be distinctly felt on putting the hand on the floor of the chest. I gave him some more atropia and morphia hypodermically, and ordered some bran-water, which he took. Early on the morning of the 5th December I was again sent for by the owner, as the horse was getting quite wild, and like a horse with head-staggers. On seeing him again he did appear wild, as he was never at rest, but prancing continually up and down the stall, the sweat running from his body, and throwing up and down his head as usual. Pulse more accelerated than before, about 90 per minute, still intermittent and becoming weak. Temperature 105° ; breathing short and very quick, just gasping for breath, with a great tendency to suffocate. I told the owner that I did not expect him to live. He died on that day, and the result of the *post-mortem* examination was as follows: Bowels rather full, but little or no inflammation present; liver considerably enlarged; kidneys slightly softened, and small abscess in the right; bladder normal and nearly empty. On opening the chest, I found slight pleural adhesions; Dropsy of pericardial sac; heart fatty and very much hypertrophied, and on opening it I found two tumours, one in each ventricle, the largest in the left a complete cast of the cavity, and passing into the aorta for a short distance. The tumours were partly of a yellow, tough substance, and partly dark, soft blood-clots. I consider that the tumours were the cause of the peculiar symptoms in this case. All the other organs were healthy.

Remarks.—When we had his head elevated to drench him he seemed to get excited and nearly choked, and when we let his head down he would fling it up and down for a number of times, and then seem relieved of the pain. Might that action on his part have anything to do with relieving the obstruction offered by the tumours to the blood-flow through the heart?

PATHOLOGY OF ROARING.

BY THOMAS GREAVES, F.R.C.V.S.

EVER since Mr. Hopkins introduced the subject last March, before the Lancashire Association, I have made a special study of the matter. I not only perused many writers, but I have also gone often to the knackers' yards and made careful examinations of the

Larynx and the recurrent nerves of a large number of horses. Some of these horses were bad roarers; some of them were not roarers; in every case tested before death. Some of them were old, some young; some of them were heavy draught horses, others light-bred horses; in every case the examinations were made immediately after they had been knocked down.

In these examinations I have observed certain conditions which, it would seem, have escaped the observation of other anatomists; at all events, I have failed to find in any writer or speaker any allusion to it in the slightest degree whatever. The condition of which I speak is this: In every case in which the usual defective condition of the muscles of the left side of the larynx exists the recurrent nerve on that side either has no connection with the larynx whatever, or else the nerve is in such an attenuated condition as to be unable to afford any nervous influence or power. I have found in some of the cases the fibres of the recurrent nerve on that side separate into three or more; these disperse in the cellular membrane; they positively vanish, and I am satisfied there is not a vestige of nervous fibre approaches nearer than six or eight inches to the larynx on that side; and further, I am fully satisfied that these conditions have always been so, that the nerve on this side never has been in connection with the larynx. In other cases, where the muscles were, as usual, wasted and blanched, I found the recurrent nerve on that side was like unto a thin thread, instead of being like a crow-quill; it seemed to have no nature in it; it would break on the slightest tension, as if it were rotten, instead of being as strong as whip-cord, the same as was the case in the recurrent nerve on both sides in horses that were not roarers, and where the muscles of the larynx were plump and in full vigour.

I have pondered over this matter a good deal, and have come to the following conclusions: (1) that this defective condition of the recurrent nerve occurs at the time of copulation, and has been in this state from the earliest period of utero-gestation; (2) that the wasted, blanched condition of the muscles of the larynx had not always been in this state, but *that at birth they were perfect*. It must be remembered that up to the time of birth these muscles were never put into action, that they obeyed the laws of growth simply, requiring no nerve force to put them into action, and such condition might be no detriment until after birth.

The question arises, when do these muscles change into this blanched, wasted, helpless condition? What are the causes acting at the time? Is it weeks, months, or years after birth? On this point all writers are silent; our knowledge is at fault; but this we do know, that a horse may be to all appearance perfectly sound

in his wind at one period of his life, and at another period of life he has become a hopeless roarer, although he has not had one day's sickness or the slightest sore throat in the meantime. Does not this look like an inevitable condition, a natural process occurrence? And my conviction is that no human aid or skill can alter it; that is, can make the nerve elongate, or become plump and well-conditioned, nor restore the muscles to their pristine vigour. There is a special condition or species of Roaring called "Belland," which is, I have no doubt, a state similar to the above, but in which it is quite possible both recurrent nerves are affected, and the muscles of both sides of the larynx are alike affected; some of these cases may enjoy perfect health, but on the slightest exertion, ay, in some cases if you only go and stand up by their side, they begin to make a noise in their breathing; and if you continue to stand by them the noise becomes greater and greater, until it sounds like the strokes of a saw going through a deal board, and the spasm or obstruction becomes so great that he will suffocate and rush forward against the wall and die unless you at once open the trachea, when relief is instantaneous, proving incontrovertably that the difficulty exists in the larynx. I can understand this new operation, which some call an experiment, and others call mutilation; viz., the removal of the vocal chord and crico-arytenoid cartilage, being an artificial remedy consequent on giving free passage to respiration, the success of which is a consummation devoutly to be wished.

There are those who advance the opinion that the seat of Roaring is not in the larynx at all. I think the plain common-sense evidence is dead against them. In my opinion, it is in nearly every case simply and purely attributable to a total loss of power in the muscular fibres of certain muscles in one or both sides of the larynx, and this, again, is consequent on an absence of nervous influence. The condition of the vocal chord and the lining mucous membrane is always found in its normal healthy condition. I can conceive as a result of the removal of the vocal ligament and cricoid cartilage, that after a certain period the larynx must fall in, or collapse more or less, and therefore the end of such a case will be worse than the first.

TUBERCULOSIS.

BY TEDBAR HOPKIN, F.R.C.V.S., MANCHESTER.

THE transmission of Tuberculosis from one class of animal to another is much easier and more common than is generally supposed.

A chain of facts I learned from an old college friend, and which had been noted in his practice, are worthy of record. He was called in to see a cow belonging to a nobleman, and found it to be in an advanced stage of Tuberculosis. It was killed; and at his suggestion, a heifer, the daughter of the cow, and whose appearance was not satisfactory, was also slaughtered some short time afterwards. The *post-mortem* examination showed tubercles pervading the whole of the viscera. This was followed by a serious outbreak of Tuberculosis in the fowls on the same homestead and in the rabbits on the estate, large numbers dying from it.

In an adjoining village a rabbit-warren was made to supply rabbits for coursing, and stocked with rabbits from the above-mentioned estate. The disease broke out to such an extent in this new warren as to compel the owner to seek the opinion of my friend, who, knowing the previous history of the outbreak, was enabled to trace it to its source. He also gave me particulars of a case of Tuberculosis in the horse. Personally, I have never seen it in this animal, but I believe the late Professor Robertson was of opinion that it did occasionally occur. It is quite time more active steps were taken to prevent the milk from Tuberculosed cows being consumed by human beings; and it is one of the things, if properly done, that would materially help to lessen our death-rate in infants.

RUPTURE OF THE RIGHT INTERNAL ILIAC ARTERY, THE RESULT OF A FALL.

BY VETERINARY-SURGEON J. A. MEREDITH, A.V.D., CHIEF STATION
VETERINARY HOSPITAL, MHOW, CENTRAL INDIA.

I HEREWITH send the following rough notes, taken from the Record of Treatment Book, of a case that recently occurred in the regiment under my charge, for publication in the VETERINARY JOURNAL, provided it is considered of sufficient interest. I do not find another instance recorded in which a rupture of this blood-vessel has been the result of a fall.

Case 109, E 5; subject, bay Persian gelding, aged six years, 5th R.I.L., 20th Nov., 1888. Rupture (blood-vessel). My attention was called to this horse in the following manner: About 10.15 a.m. on the 20th November, 1888, I was making my morning visit to the chief veterinary hospital, when I was informed by the muccadam of E troop, 5th R.I. Lancers, that troop-horse E 5 had fallen down and broken his leg. I immediately proceeded to E troop stable, and found the horse down and unable to rise. I inquired into the case, and learnt from the syce that the following

had taken place: About half-an-hour previous to my visit the horse had broken loose from his head-collar (web), had turned right about in his standing, and was proceeding outwards through the archway which is at the back of each standing, with the heel-rope on. When outside he was too hastily hunted in by two sentry syces, during which he came into violent contact with the archway wall and fell heavily on his off-side. (I would give it as an opinion that he fell through being entangled in the heel-rope, as he fell directly on his back and his legs up in the air.) He staggered for a few seconds, and was reported to have risen of his own accord and walked two yards or so forward into his standing, when he was secured with his head-collar. No further report or notice was taken of the patient until my attention was called to him about half-an-hour afterwards. I examined him, and seeing he was unable to rise, I endeavoured, with help, to get him up, but to no purpose, as he could not use either of his extremities, even a little; neither did he take any notice when pricked with a pin in his hind extremities. He presented the following symptoms: Pulse imperceptible, mucous membrane quite white, tongue protruding out of the mouth, with lower lip pendulous and the colour of whitish paper on its mucous surface; the tongue and mouth exhibited a similar blanched appearance. A most characteristic cold touch was felt over the head, neck, and extremities; breathing long, deep, and laborious. The abdomen was greatly distended, and appeared to enlarge rapidly; other symptoms peculiar to spinal paralysis were present. I administered some stimulants and passed the catheter, but only a little urine was removed. I had him carefully packed and allowed to remain quiet for a time, but in a few minutes he endeavoured to get up, when he fell over on his near side and died a few minutes afterwards, or about one hour from first falling. I could not bring my mind to believe that a fracture of the vertebræ had taken place, because the syce had informed me the horse had stood up half-an-hour after the accident happened, and then suddenly fell. Besides knowing the syce well, I found he was to be relied upon. Also the symptoms did not show anything but rupture of a blood-vessel.

Post-mortem Appearances.—Abdomen much inflated, and abdominal cavity distended with blood and accumulation of gas in the intestines; the blood in the cavity was found to be clotted in various situations, more particularly about the pelvic circle and up to the anus, which was everted from the pressure upon the inside. I discovered the cause of death to arise from an extensive rupture of the right internal iliac artery at the point where it gives off the internal pudic artery. The rupture appeared to extend to the

quadrification of the abdominal aorta, but the most characteristic appearance existed towards the internal and posterior surface of the femur, and about one and a half inches from the head of the bone, where I observed that the muscular tissue was literally smashed up, jelly-like in structure, with deep discolouration for some distance around. The rupture extended throughout the internal pudic artery. The injury above mentioned was caused by the fall and coming into contact with the wall of the archway. The principal organs of the body presented a blanched appearance.

MICRO-ORGANISMS AND DISEASE, ESPECIALLY WITH REFERENCE TO THE QUESTION, WHAT IS THE PATHOLOGY OF "SURRA" IN ANIMALS ?

BY R. W. BURKE, A.V.D., JUBBULPORE, INDIA.

THE subject of micro-organisms and disease, at all times interesting, is specially important at present, on account of the question, What are the disease-producing organisms, and what harmless ones? A further aspect of this question has now presented itself, namely, whether harmless or not, the same organism may be present in quite different diseases. Thus, I may mention the "Surra" parasites are far from being confined to that disease alone. Dr. Carter has quite recently shown that in Remittent Fever of man the blood contains parasites which in their morphology and general features are identical with the parasites of Surra in the lower animals ("On the Lately Demonstrated Blood Contamination and Infective Disease of the Rat and Equines in India," 1888). And we have seen organisms in the blood in Intermittent Fever of the horse ("Equine Diseases of India," July, 1887, p. 4), resembling those described by Laveran in the blood of man during the Ague paroxysms, which receives confirmatory evidence from the pen of Dr. Carter, who found that in ninety-three instances of malarious disease in man (Intermittent Fever, Remittent Fever, and Splenic Cachexia) these organisms were present in nine. As to the influence of blood parasites in causing disease, it is satisfactory to note that in addition to the case of Intermittent and Remittent Fever above mentioned, there is the further fact of Dr. Kynsey's observation of the disease called "Beri-Beri," or Anchylostomiasis, in Ceylon, being also due to a hæmatozoon, which affords interesting confirmation of the views already advanced by veterinarians on the continent of Europe, in which similar parasites have been shown to be the cause of fatal Anæmia in horses.

Now we come to the most important question, viz., these parasites having been met with under so many different disease

states, do they ever exist in the bodies of animals without producing any disease? Medical practitioners in Ceylon have shown that the presence of the *Anchylostomum duodenale* in the case of human beings caused "Beri-Beri," or pernicious Anæmia, and sometimes no trouble; if, however, the Anæmia was also present the parasites were always present, although these parasites alone in large numbers are unable to produce Beri-Beri in the bodies of other men enjoying perfect health (*British Medical Journal*, 30th June, 1888). Lewis, Crookshank, and Carter have already demonstrated the presence of Surra organisms in the blood of healthy rats. Such a fact in itself is sufficient proof that infusorial organisms of more or less similar appearance exist under varying conditions—pathogenic and non-pathogenic—without implying any necessary connection between the conditions themselves. How, then, are we to distinguish the conditions? It is remarkable that, with all our attention and care shown in the past in the investigation of the characters of the monads seen in Surra, the clinical features of the disease were not similarly considered. We find accordingly a variety of designations now in use, and we still rely for the most part on the interposition of side questions; so that our facts are built up, so far as they go, on the suggestion of others, instead of being founded on facts encountered by us in actual practice.

Other organisms, besides the above, have been found to exist in this pathological condition, or so-called "Surra" in horses. Thus we had noted (*VETERINARY JOURNAL*, January, 1888) the presence of a bacillus, and which we believe to be more or less common, though not specially connected with the disease. And Dr. Cunningham (*VETERINARY JOURNAL*, October, 1888) has described similar organisms in the blood of horses suffering from this disease which was lately submitted to him for examination.

Those who have appreciated the true nature of Surra will not be surprised at the excessive mortality it causes in our animals. In the meantime, further investigations are needed, as it is fully admitted by Dr. Carter that the proof of the trichomonas being the cause of Surra is incomplete. No matter what the fate of the monads, the classification of the clinical characters peculiar to Surra is an object of the first importance, and the interest in the share taken by infusorial organisms in the production of this disease affords no exception to the rule.

Much of the Surra enzootics among horses which prevail so extensively in most parts of India, might be prevented if the source of the parasites causing this disease could be found, in place of the numerous hypotheses which have been put forward. Hitherto the source of the Surra parasite has always appeared to be one of the most obscure problems in etiology. Lately, when making an

examination of the liver of some field rats, I noticed the presence of little cysts, to which the *Trichocephalus dispar* was attached; and the question occurred to me that the disease called Surra in horses was probably in some way connected with the presence of rats infested with parasites; for it would appear that the embryos, being washed away into the alimentary canal along with the bile, are deposited with the fæces on gram, etc., supplied to the animals, and to which the rats have access. It was observed by Veterinary Surgeon Cooper that the persistency of the disease in ponies, in the Berars, was associated with the presence of rats in the stables; and he puts forward the question, Are the rats a cause of outbreaks of Surra among horses? To me it seems probable, considering the great tendency these animals have to harbour parasites of different species, and as I have just noted, the *Trichocephalus dispar*, a parasite shown to be concerned in the production of one form of Anæmia in Ceylon (Kynsey, "Report on Anæmia or Beri-Beri of Ceylon," 1887).

Doubtless the appearance of the worms in the liver of rats noted by us do not show a relation of cause and effect between the latter and the disease said to be produced by them; but they appear to show that animals infested with these parasites are not good companions to have in a stable containing horses; for it is certain that where rats are numerous, and are themselves infested, the food of horses, however abundant and wholesome, is no less affected by worms which have been deposited with the fæces contained in it. The amount of excreta in bran and grain sold in the bazaars in India is often surprisingly great; grains stored away in native houses have been found to be abundantly mixed with the excreta of rats. Therefore, for many reasons, in India our treatment in outbreaks of Surra should mainly be directed to the question of food supply for our patients, to determine whether it has or has not been exposed to contamination of any kind. Otherwise, in India the inexperienced practitioner may be surprised at finding that the horse beans (gram) or other food-stuffs often consist of a mixture, in varying proportion, of the evacuations of the common house-rat.

There is something to be said in favour of these views: first, the presence of the trichocephalus in the Beri-Beri of man seen in Ceylon; secondly, the presence of these worms in the liver of rats in India, noted by us; and lastly, the presence of the rats in association with cases of Surra witnessed by Veterinary Surgeon Cooper.

Editorial.

THE ARMY VETERINARY DEPARTMENT.

IN another part of the Journal there appears a new Royal Warrant which was recently issued, amending the regulations relative to the pay and retirement of officers of the Army Veterinary Department, in so far as these regulations affected the officers engaged for a period of ten years. In 1878, a warrant then promulgated materially altered the position veterinary surgeons had previously occupied in the service; what was known as the "regimental system" was abolished; there were no longer to be Veterinary Surgeons gazetted to regiments, except in the Household Cavalry, but they were to constitute a department, and were placed on a special footing: wearing a particular uniform, and enjoying certain privileges which they did not before possess. These privileges were a slightly increased rate of pay, exemption from such contributions as mess and band subscriptions (which pressed heavily upon them), and from paying for their horses' forage, etc. The advantages of this new system have been fully realised, and to those who entered the army after its introduction the benefits have been very great; for while all were exempted from the heavy contingent expenses of the old system and occupied a more independent position, those recently joined received the very liberal pay of two hundred and fifty pounds a year, exclusive of forage, and lodging and servants' allowance, for ten years. This period was that for which they were engaged, and at the termination of it they were at liberty to leave on a gratuity of eight hundred and fifty pounds, or the Government could dispense with their services on the same terms. The serious drawback was that only four of these officers could be retained annually; and considering that in the first year of the New Warrant ten joined the Department, it was obvious that, if the regulation was to be carried out, six of these must be dismissed in 1888. The intention was, no doubt, to effect a saving to the country, as by the ten years' engagement the higher pay to which longer service would entitle them, as well as retired and widow and children's pension, would be got rid of. But the arrangement was not a wise or satisfactory one. After spending ten years in the army, the greater part of the time on foreign service, and at the best period of a young man's life, to be turned adrift to push one's way in a very different line, was not at all a pleasant look out, and the uncertainty of retention made such an event not at all improbable. And to the country, the dismissal of veterinary officers after they had become acquainted with army routine, and had gained valuable experience of a special kind, was a palpable loss.

For these, and some other less pressing reasons, it was deemed necessary to introduce a less rigid rule, and to allow more option in the matter of retention at the termination of the ten years' engagement. By the new warrant this has been effected; so that now all, some, or none of those who enter, may be kept on after the decennial period

has been completed, this being dependent upon certain conditions—such as the conduct of the officers while so engaged, their competency, and their desire to improve their professional knowledge. When a decision has been arrived at as to their fitness for retention, and they have passed the qualifying examination for promotion (which is not required if they have previously become Fellows of the Royal College of Veterinary Surgeons, and which entitles them to have F.R.C.V.S. placed after their names in the Army List), they are then placed on the permanent establishment, and are eligible for increase of pay, according to rank and length of service, as well as pension.

It was a matter for discussion whether this new system, or a reversion to the one which was in force previous to 1878, with its smaller rate of pay and no ten years' engagement, should be adopted; but consideration for the financial requirements of officers for some years after joining, and also the necessity for ensuring that none but good men should remain in the Department, prevailed in favour of that which is now introduced.

In consequence of the computed large increase in expense which the new warrant prospectively entails, it was necessary to make some modification in the rate of pay allowed after ten years, and this has been effected by a reduction of only sixpence a day for the subsequent ten years; after which the pay will be the same as is now given. This, however, though a very small decrease in the pay of the individual, will yet leave the system a more expensive one than the last warrant would have permitted.

We believe that, by this concession, the Government has removed the only real grievance, if such it could be called, which has of late years existed in the Army Veterinary Department, and its members now enjoy a position and emoluments such as no veterinary officers hold in any other army in the world. That they fully deserve this, no one who knows what their duties are in nearly every quarter of the globe can deny; and the high estimation in which they are held by the military authorities is ample evidence that they are worthy of confidence. In this it is matter for congratulation that they owe their status to no back-door influence or favouritism, but to solid merit and devotion to duty. The rapid rise from what might be considered contumely and comparative neglect, to the position of to-day, has been achieved by the determination of every officer to compel recognition of his Department by doing everything in his power to show that his aim was to faithfully serve his country and elevate his profession.

An excellent career is offered to those who are fortunate to obtain admission to the Veterinary Department of the Army, if only they are the right kind of men and are animated by the proper spirit. Their opportunities for study and observation are unrivalled, and it is entirely their own fault if they do not excel. Every year should see an advance in knowledge and usefulness, and their exalted position attracts more attention to the manner in which they utilise their opportunities and advantages; remembering what labour and sacrifices have been exacted in attaining this position, should make them doubly anxious to maintain, and, if possible, enhance it.

The value of veterinary science, and the need for veterinary knowledge in the army, is forcing itself upon the attention of the military authorities from day to day. By a quite recent decree, it is rendered compulsory that all officers of mounted corps attend a special course of instruction at the Aldershot Veterinary School before promotion; and to the new Volunteer artillery batteries of position veterinary surgeons are to be appointed, who will wear the same uniform as their colleagues in the regular army, with one or two slight differences. In the event of mobilisation, all could work under the same direction, and alike do their duty for home and for country.

LANOLINE AS A HOOF OINTMENT.*

THE property of lanoline to absorb water and to retain it, is the reason for its employment as an application to the horn and skin. Lanoline does not irritate the skin, but penetrates it very easily; so that it is an excellent vehicle for ointments, especially when it is a question of treating the deeper layers of the integument; for fats which are not, or only with difficulty, miscible with water do not penetrate so deeply. With lanoline a number of experiments have been made on living, as well as dead horses' hoofs. From these it appears that the horn of living animals becomes not only elastic and firm, but it is also no longer liable to splitting and breaking. The improvement in the horn increased during the time of the observations, and was specially noticeable on shoeing the horses, when taking off the shoes and on cutting the hoof. Dead horn treated with lanoline became soft and pliable. One of the properties of lanoline is also this: that it does not decompose, and does not form any fatty acids, as is the case with other vegetable and mineral fats, which thereby spoil the consistency of the horn, and increase its tendency to dry up.

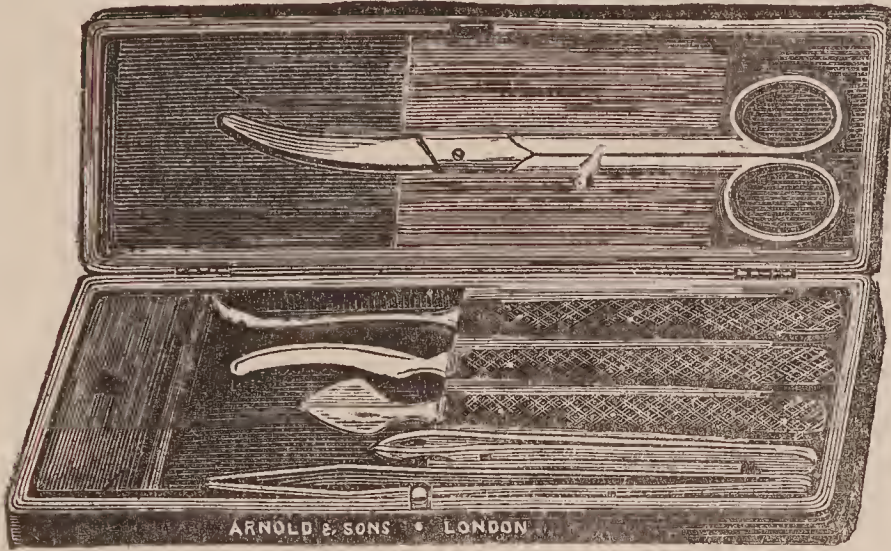
On using lanoline on horn, it is necessary that the hoof should previously be well cleaned by means of cold water; after having been dried, the lanoline in small quantities is rubbed in by means of a woollen rag into the coronet and wall, and where the shoe does not make this impossible, and also in the sole and in the cleft of the frog. The embrocation is continued until a dull gloss is visible on the surface of the horn. To embrocate the hoof with lanoline without rubbing it in thoroughly is not only useless, but calculated to do more harm than good; because it will collect dust and dirt, and form a coating with the lanoline which will obstruct the pores, whereby the exhalation from the hoof horn is impeded. The lanoline used as hoof ointment possesses this advantage over all other ointments and fats, that it leaves the pores of the hoof free and transpirable.

NEW INSTRUMENTS FOR BLOODLESS NEUROTOMY.

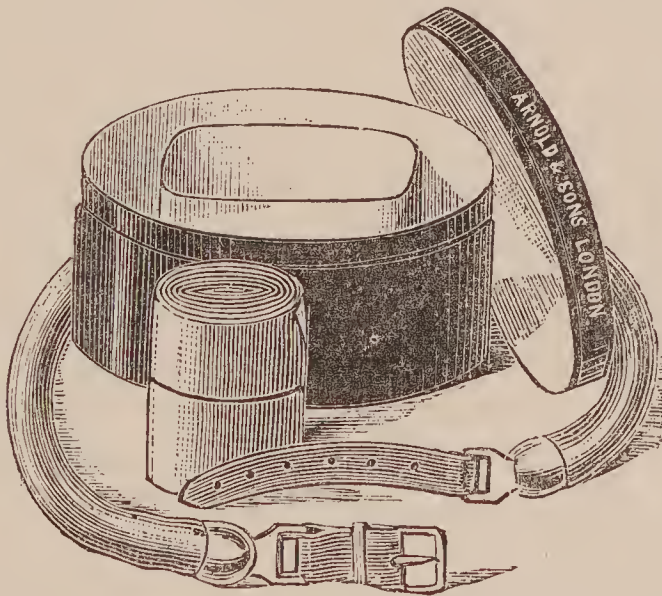
EVER ready to meet the demands of science and the profession, Messrs. Arnold and Sons, West Smithfield, London, have recently brought out another case of instruments for the performance of that extremely useful and simple operation, Neurotomy. These instruments are designed by one (Professor F. Smith, Army Veterinary School, Aldershot) who would appear to have had exceptional experience in the performance of this operation. It will be

* Extract from the *Hufschmied*. Romnald Tobolewsky: "Lanoline as a Hoof Ointment," (*Przeglad Ueterynarski*, Nr. 8, 1888, and Koch's *Defterr. Monatsschrift für Thierheilkunde*, Nr. 10, 1888).

remembered that some years ago, this gentleman advocated the system of bloodless Neurotomy by the use of Esmarch's bandage. This he has largely and successfully practised, and the instruments, consisting of knife, bistoury, needle, dissecting and artery forceps, and scissors, with an elastic bandage and



tourniquet, have in his hands yielded most excellent results. The instruments are in black handles, large and firm to hold ; and the needle requires no threading. The mode of applying the elastic bandage and tourniquet was practically demonstrated at Newcastle recently. To those who seldom per-



form Neurotomy, we advise the use of the bandage, for they cannot help but find the nerve ; to those who operate frequently, we say provide yourself with a simple contrivance by which every drop of blood in the limb is removed, and no ice or cold applications required before the operation.

Reviews.

LAMENESS OF HORSES AND DISEASES OF THE LOCOMOTORY APPARATUS.
By A. LIAUTARD, M.D., V.M. (New York : W. R. Jenkins. 1888.)

The distinguished Director and Professor of the American Veterinary College, New York, has laid the veterinary profession in English-speaking countries under a heavy obligation, in offering for their acceptance

an excellent little manual of lameness and disease of the horse's limbs. It is the only work specially devoted to the subject in our language, and it treats of it in a thoroughly practical manner. Among the most important chapters are those dealing with the special diseases of the extremities, such as those of the shoulder, elbow, knee, hip, stifle, and hock joints, and the affections of the digital region ; though there is little to be found with regard to diseases of the feet, the author having already treated this subject in another monograph. Other chapters are occupied with the subjects of symptoms and diagnosis of lameness, and diseases of bones, joints, muscles, and tendons. The descriptions are good and clear, and altogether the work may be considered an important contribution to this department of veterinary surgery.

THE VETERINARY SURGEON'S DIARY AND NOTE BOOK FOR 1889. By E. E. BENNETT, F.R.C.V.S., Army Veterinary Department. (London : Baillière, Tindall and Cox.)

Veterinary surgeons can no longer complain that they are not as well provided with a professional diary and note-book as the medical profession, or, for the matter of that, their colleagues on the Continent. For many years German and Russian practitioners have enjoyed the advantages and conveniences of such a publication, and now these are placed within the reach of English veterinary surgeons by the endeavours of Mr. Bennett and the enterprise of the well-known veterinary publishers. So far as we can discover, Mr. Bennett has omitted nothing that could be of use to the practitioner in the way of ready reference, and in the compilation of this pocket diary and visiting book he has evidently spared no pains to render it complete. A wonderful amount of useful information is condensed into a small space ; there are sections on forage, medicines, dentition, weights and measures, a table of solubility, symptoms and treatment of the most important poisons, temperatures of animals in health, periods of incubation of disease and of utero-gestation, composition of milk of various animals, chief internal parasites of animals, Contagious Diseases (Animals) Act, etc., as well as a kalendar and a well-spaced diary, the whole contained in a handy pocket-book which occupies but little room in the breast-pocket, and which is sold for two shillings and sixpence, and three shillings and sixpence. We are certain the diary will have a great demand, as nothing more useful for every-day work could have been contrived ; and Mr. Bennett and the publishers well deserve the thanks of the profession for the boon they have conferred.

REPORT ON ERUPTIVE DISEASES OF THE TEATS AND UDDERS OF COWS, IN RELATION TO SCARLET FEVER IN MAN. By Professor BROWN, C.B. (London : Eyre and Spottiswoode.)

This report, prepared by Professor Brown, is in reality a continuation of the discussion as to the bovine origin of human Scarlatina at the London suburb of Hendon. It constitutes a reply to those who maintained that the epidemic of this disease, which occurred there in 1885-6, was due, primarily, to an eruptive disease on the udders of cows in a

certain dairy, by which the milk was rendered infective. The positive proofs, as given by Mr. Power and Dr. Klein, have been already published in this Journal; the negative evidence presented by Brown, Axe, Crookshank, and McFadyean, is published in this report.

Scarlatina, as it is observed in the human species, has never yet been observed in the bovine species, nor yet in any other kind of animal. Therefore this disease not being a cow malady, and not transmissible to that creature from man in any of the ordinary ways, it is not likely that mankind can be infected by the cow. The Hendon epidemic of Scarlatina is the only one associated with an eruptive disease on the udder of cattle, though such eruptions are far from uncommon. Therefore the evidence in favour of the human disease being due to the bovine one, is not sufficiently strong to incline careful and discriminating people to the belief that there is any relationship between them. Such is the conclusion, it would appear, arrived at by Professor Brown, who says: "The question of the relation between the Hendon cow disease of 1885-6, and the outbreaks of Scarlatina which were coincident with it, remains unanswered. The exact conditions which existed then have not recurred, and probably never will recur in their entirety." It cannot be said that the report adds anything to our knowledge of pathological process, nor yet to the eruptive diseases of the cow; but it is interesting as showing the close intimacy existing between human and animal medicine, and the urgent necessity for learning everything possible concerning their points of contact.

ROARING IN HORSES. By EDWARD COTTERELL, M.R.C.S. (London: H. K. Lewis. 1888.)

The latest addition to shilling dreadful literature demonstrates how easy it is to write a book—for a purpose. There is nothing new in the present venture except the inaccuracies, the mysterious "shortening up of the remains of the muscles attached to the arytenoid cartilages," and a solitary case in which a *horse-dealer* failed to notice that a horse roared a month after the operation, which Mr. Cotterell, M.R.C.S., says he performed. It is, however, only fair to the dealer to state that the author omits to mention whether the horse roared before the operation, and if so, to what degree. As a professional work it is quite valueless; it teems with errors which it would be tedious to detail. The "Radical Cure" simply consists of Fleming's method of opening the larynx and removal of the vocal cord, combined with the mystery already noticed. Without knowing when Fleming's operation was first performed (though it was before Mr. Cotterell attempted it, and certainly long before last July), the M.R.C.S. claims priority, of course. The author says that he "carefully excises" the vocal cord and process. If that be the case, he ought not to interfere with the muscles at all, beyond dissecting them off the process. So when he talks about the "remains of the muscles," he is either unacquainted with the anatomy of the horse's larynx, or he does not "carefully excise." If the author had recorded one or two cases which had been examined by respectable and competent judges, and found to

be cases of roaring ; if he had then operated and cured or relieved the animals, in the opinion of the said judges, well and good. We should be delighted, even if the results appeared in a penny dreadful. Unfortunately, there is absolutely nothing in the book worthy of the name of proof, and taking it on its merits, we have come reluctantly to the conclusion that it is a too rapidly concocted advertisement, by one who is very imperfectly grounded in equine anatomy and physiology, and hurried through the press in order to forestall in the market the scientific work of others ; and perhaps also to extend the business of an enterprising soap manufacturer. It is a matter for regret that a professional man should descend to such an extreme course, but in the matter of Roaring especially, ordinary scruples do not seem to be entertained by M.R.C.S.'s, and they appear to deal with it in a way they would not dare to do with any subject relating to their own profession. Such a course is not creditable. F. R.

Proceedings of Veterinary Medical Societies, &c.

THE ROYAL COLLEGE OF VETERINARY SURGEONS.

MEETING OF COUNCIL HELD NOVEMBER 21ST, 1888.

PROFESSOR PRITCHARD, President, occupied the chair, and there were present Professors G. T. Brown, C.B. ; W. Duguid, Dr. Fleming, C.B. ; Sir Henry Simpson, Messrs. J. B. Barford, J. S. Carter, T. Greaves, W. J. Mulvey, J. F. Simpson, Wm. Wilson, F. W. Wragg, G. Thatcher (Solicitor), and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the previous meeting were received and confirmed.

Correspondence.

The SECRETARY reported that he had received letters from the following gentlemen, regretting their inability to attend: Genl. Sir F. FitzWygram, Professors McCall, Walley, and Williams, and Messrs. Briggs, Cox, Dray, Simcox, Taylor, Whittle, and Woods.

Dr. FLEMING then moved the following resolution: "When the words 'the profession' or 'members of the profession' are used by this Council, they shall apply to members of the Royal College of Veterinary Surgeons, and this interpretation shall apply to the resolution passed by this Council with regard to the inquiry instituted as to hereditary unsoundness."

Sir H. SIMPSON seconded the resolution.

A discussion then ensued, in which the following gentlemen took part: Mr. Wilson, Professor Brown, Mr. Greaves, Mr. J. F. Simpson, Mr. Wragg, and Mr. Thatcher.

Dr. FLEMING then, with the assent of his seconder, withdrew the first resolution, and moved that it be an instruction to the Committee to send the circular of inquiry on hereditary unsoundness to members of the Royal College of Veterinary Surgeons only.

Sir H. SIMPSON seconded.

Mr. BARFORD spoke in support of the amended resolution, and it was then put to the meeting and carried *nem. con.*

The proceedings closed with a vote of thanks to the Chairman, proposed by Mr. J. F. SIMPSON and seconded by Mr. BARFORD.

CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting of the above Society was held at the First Avenue Hotel, Holborn, on Thursday, December 6th, Alfred Broad, Esq., the President, being in the chair, and there were present twenty-seven Fellows and two visitors.

The minutes of the previous meeting were taken as read. Letters were read from Professor Walley and Messrs. Edgar and Hurndall. On the motion of Mr. Wragg, seconded by Mr. Newbery, the Secretary was instructed to write a letter of condolence to the widow of Professor Tuson, who had been an honorary Fellow of the Society for many years.

Mr. W. S. Reid, M.R.C.V.S., and Mr. Fitzwilliam Wright, M.R.C.V.S., both of London, were unanimously elected Fellows of the Society, and Mr. H. Springett, of Sydenham, Mr. F. W. Kendall, of Hitchin, Mr. Lewis, of Barnet, and Mr. S. M. Wilson, A.V.D., were nominated for Fellowship.

Mr. FRANK WRAGG exhibited the bladder of a bitch containing a calculus.

The CHAIRMAN then called upon

Mr. J. ROALFE COX, who said, Mr. President and Gentlemen: This short paper which I am permitted to read to you, is but a faggot of facts loosely put together, but there is sufficient matter in it for reflecting purpose, and light enough to show the way to a friendly discussion. Sound or unsound, that is the question; and thinking experience of many years in association with our common calling might be utilised in the inquiry, we have asked ourselves the question; have employed ourselves in the examination of a fitting case, and, if not too tedious, encroaching too much on your time and patience, would invite you to go over this examination with us whilst trotting out our subject—The Veterinary Profession. Its age is barely a hundred years, and prior to its birth the doctoring of animals, and of horses in particular, was chiefly in the hands of the empiric and self-taught, whose practice, more or less barbarous, was little calculated to lighten the loss which unrelieved disease and injury were entailing on the nation. With us, the birth of the profession in the training of its practitioners was contemporary with the foundation of the Royal Veterinary College in London, or rather outside London, for we may picture to ourselves Old Pancras as “in verdure clad,” and then a peaceful grazing ground. We might indeed, in thinking of the olden time, quote, not inaptly, “The Passionate Shepherd to his Love.”

“Come live with me, and be my love,
And we will all the pleasures prove
That hills and valleys, dale and field,
Woods and steepy mountains yield.”

But “*on a changé tout cela*,” and, with the march of intellect, poetry has ceded place to bricks and mortar. Still stands the Veterinary College where St. Bel and Coleman first began their work, destined to bear good fruit, and in the history of the profession, from earlier time, such other men as Moorcroft, Field, Youatt and Blaine, Sewell and Moreton, Percivall, Dick, Varnell, and that lecturer unsurpassed, Charles Spooner, are amongst the honoured names which live in memory. Others there are, still living, who have served the cause and helped it upwards.

During this brief chronicle touching its age and pedigree, it will be noticed that our subject has already been trotting before us at steady pace up-hill, not halting; but it is said that, later on and nearing present time, the course had turned and shown our subject in its pace down-hill, failing and crippled. If it be found, as we examine on, our subject, really had been going well up rising ground, and now lamely down, for chance of remedy we might seek cause.

What of its food and natural support ?
 How of its training and its after test ?
 Has it been over-ridden and ill-used ?
 Its food—certes, in its earlier days,
 The food was ample, for lack of science,
 Hygiene ignored, and gross mismanagement
 Had yielded much disease.
 Cases were varied, and of every day,
 And gave to each long labour and good gain.
 Great progress was the notable record ;
 Disease was studied well, and men bestowed
 All energy to that, and that alone :
 Hence their success and favour in the cause.
 For long the trial was on rising ground,
 And still our subject, our profession, showed
 No sign of falter ; but sad times arrived,
 And, hard to say, perhaps, when the course had turned ;
 But turn it did, and our profession stumbled.
 Science no doubt induced successful men
 To study causes, and how best prevent,
 And with a will less worldly-wise than grand,
 Set hard to work in sowing wide their facts,
 And killed the goose, in stamping out disease
 All which pursuit, most noble in itself,
 Most patriotic, Christianlike and right,
 Threw to the dogs the life-preserving food
 Which our profession needed.
 Present age now sees how poor the market.
 Where they drove their pigs ; many pigs were lost.
 There was a picture once, which much amused,
 And reproduced in *Punch* ;
 It represented how a herd of swine
 Was helter-skelter hustled down a steep,
 And all were drowned.
 A countryman, an amateur of pork,
 Gazed on this picture, and, wondering, asked
 A friendly neighbour—parson, as it chanced,
 “ Who paid for they drowned pigs ? ”
 We too may ask, Who paid for our drowned pigs ?
 A grateful nation might have lent a hand,
 The State have made some grant ; but not as yet
 Has any help, or scarcely recognition, come ;
 And now for want of food our case becomes
 Weaker and weaker, as hard pressed down hill.
 So much for food : and how about support ?
 The public felt and much deplored its loss,
 And when good help appeared, with open hand
 Paid freely ; but the times have sadly changed.
 The farmer once could well afford to pay,
 Now he has fewer cases and less means ;
 And so with most, once liberal as rich,
 The times have changed, and so has our support.
 Say, is there food, is there support enough ?
 Time was when our profession carried well
 All weight imposed, and amply was repaid.
 But not so now ; we ask it now to bear
 Three times the weight, and with a third the food
 Why, then, the wonder that it goes down hill,
 Crippled and weakened by its heavy load ?
 How of its training, and its after test ?

Go back some score of years, judge even ten,
 And whilst all else around was making head,
 Have we in earnest force moved with the time?
 Has education gained as much on us
 As on the many kindred to ourselves?
 We train a horse to meet a certain trial,
 That trial gauges for the coming race
 The great event with us : our public form—
 And if the trial mislead, miscount the weights,
 The training, too, inadequately pressed.
 'Tis hard upon the one who has to try
 A life-long race, and overweighted lose.
 We have a Council, let us look to it ;
 All is well done in coping with events.
 And who shall say that it has ever strained
 At airy phantoms of a tiny gnat,
 Or swallowed camels that might take our cause
 Years to digest?
 It should support the interests of all :
 First the profession, other interests, too,
 The trainer and the trained, but most the last,
 For these are young and need protecting help.
 They should, on entering a life career,
 Be well advised and candidly forewarned
 That of the many only few can hope
 To gain a place ; so many now compete.
 The trial prize, the mere diploma grant
 May but mislead, and cruel when it does.
 'Tis easier and pleasanter to give,
 But sometimes kinder the refusal far,
 Saving of money, disappointment, time.
 It is not kind, it is not even just
 To hold out promise of too easy trial :
 It looks inviting, bids the many try,
 And floods the stream already over-full,
 Till by-and-by, and not so far ahead
 Will come a ballot, who shall sink or swim?
 Well in the training and the trial, too,
 Our subject at the first went well up hill ;
 The course then turned, and on declining ground
 We see it limping, signs of breaking down.
 Has it been over-ridden and ill-used ?
 And here indictment falls upon ourselves.
 We say it has—and competition keen
 Is working hard its ruin and disgrace,
 Maybe, not got of greed—perchance of need,
 For in the number all must strive to live,
 And would that *sans reproche* all strove to live.
 We talk of status ; status has been our craze,
 Have sought to claim what we have failed to earn ;
 Have been indignant, querulous, forsooth,
 Because not priced as we would price ourselves ;
 Have thought the medical profession is
 Seeming unfriendly, slow to patronise.
 “Look here upon this picture and on this ;
 The counterfeit presentment of two brothers ;”
 And need we wonder ?
 See our profession mixed with counter trade,
 Not all preserve its practice unalloyed ;
 This is too much the custom now-a-day,

Dabbling in dealing—always risky work—
 And holds our troubled calling questionable.
 All this were better left in dealer's hand.
 These are in their vocation mostly just,
 As other folk, and would the more respect
 Us in our line, if ours usurped not theirs.
 And has it come to this? We stoop so low
 That common fairness, etiquette, and pride
 Are all forsworn; no love of neighbour left.
 The papers now teem with advertisements,
 Which cannot fail proclaim our shame abroad:
 "Powders and cow-drinks down again in price."
 That sounds professional, should make us proud!
 Such things as done—and done, too, every day—
 Should send a blush, if blushing force were left
 To such a thick, impenetrable skin.
 To overreach, to undercharge, to cheat,
 Filch his good name, and do his neighbour wrong,
 Are sorry paving-stones to bridge the way
 To honour and respect.
 But worse than these; sending from house to house
 In shoals, from F.'s and M.'s R.C.V.S.,
 Thousands of circulars soliciting,
 So unprofessional, and vulgar, too.
 The plain and illustrated all are sent,
 Some loud illuminated puffs of self;
 Some—mean and meagre missives—in coarse type,
 Besmirched with horses, prancing and in trot,
 With cows' and sheep's heads, heads of dogs and devils—
 Even osteology and horse-shoes.
 Thus have we seen our case progress up-hill,
 And going sound, and since come shambling down;
 And all who look and listen may discern
 The jade is foundered—ridden for a fall.

MR. PRESIDENT AND GENTLEMEN,—We have no secrets in professional matters; have told you we have asked ourselves a question; have employed ourselves in the examination of a case, and now submit to you the copy of our certificate: "that we have examined the condition of the veterinary profession, and find it is unsound."

We do not propose to offer opinion on the question of treatment nor the chance of cure, but if we are not alone in our verdict and there be any disposed to try their skill, may we suggest a consultation, far and wide, of all good men and true, "willing to save a life." (Cheers.)

The PRESIDENT remarked that he thought Mr. Cox had drawn attention most ably to a matter worthy of our serious consideration—no less a question than the state of our profession; our attention has been called to the state of professional etiquette, to horse-dealing and advertising. Mr. Cox also very sensibly alludes to the keen competition going on, and suggests whether it should be allowed to deteriorate the profession or whether we shall make a stand against it. It is a paper eminently worthy of consideration and discussion.

MR. WILLIAM HUNTING, who was received with applause, said he considered Mr. Cox's paper was pessimistical in the last degree, and he was surprised that so honoured a practitioner as Mr. Cox should take such a view. According to his showing, everything is blank and dull, and we are all going wrong. He (Mr. Hunting) was not a pessimist, but an optimist, and he thought we were all doing remarkably well. There always were giants in bygone days, and people are always dwarflings in their own times, and keep coming up

still smaller men, so we are told, but—not a bit of it—the simple fact is, as we begin to get into middle life and advancing years we do not like work so well, and now there are so many young men around us they get some of our clients ; they do not necessarily sneak in by doing work at a cheaper rate. Now-a-days everything is cheaper than it used to be : more can now be bought for a sovereign than at any previous time, and no doubt this affected the fees of the veterinary profession, and for this reason Mr. Cox has doubtless more difficulty now in earning £20 than in his younger days. Let us take a wider view of the profession and see how we stand. Scientifically, you surely would not say we are worse than we were ; no, we are infinitely better ; we are more scientific individually. Did you ever hear of any really scientific men in the profession twenty years ago ? no ; but there are plenty in it now. In the Army and in our schools, you will find men capable of themselves of undertaking an original piece of scientific research and carrying it through, as no man can remember in the previous history of our profession ; and as to practice, why we have better practitioners than we ever had before. Rational treatment is now the prevailing rule, and we understand that if nature is given a chance there is a better prospect of an animal getting right. Modesty compels me to refrain from saying much about literature, but I must say we are advancing from a literary point of view ; I am not speaking of periodical literature, but of books. Take Professor Macfadyean, he is a good writer ; the contributions of Smith, Nunn, Raymond, and Fleming are all good, and I much doubt if we had better in the days of the giants. As to our social position, may we not claim some advance ? As the School Board continues to do its work and cultivate the intelligence of this country, I hope the time will come when the social status of a man will not be judged by the state of his balance at the Bank, but by the balance in his head. If we take our social position to-day, the advance shows that the profession is not an “over-ridden jade” yet, for we have men of high rank in the profession ; no end of titled men may be counted among us, and good men too. Now-a-days we take a much more logical view of the symptoms and observe our cases quite as closely as men who have gone before. When considering the question of contagious diseases, our forefathers were wont to say, “There was a change of atmosphere the other day ; no doubt the disease is due to that :” another one would come into the stable and see manure about, immediately he would conclude the disease is due to dirt ; whilst still another man would say it is overwork. In every single instance they come to a different conclusion. At the present time we go a little further, and say that these diseases occur under all sorts of circumstances, but we do not overlook contagion. Even compared with our sister profession, we do our observations well. Not very long since the sister profession discovered that scarlet fever came from cows. It is a feather in our cap to know, that one of our profession pointed out, at the time, that these observations were wrong. Professor Axe pointed out that there was a possibility and a very great probability of the infection coming from the human species. I mention this instance, one which occurs to me most readily, as showing where the veterinary profession observed more cutely, and concluded more correctly, than our noble sister profession. Our teaching is now better than ever it was. As to horse-dealing—why is horse-dealing any worse than house-dealing ? Again, there is no disgrace attached to men who engage in horse-racing, and that is a far more villainous proceeding than horse-dealing, but it depends on the way the dealing is done. If one buys a horse, knowing it to be wrong, for £20, and sells it for £150, why of course it is wrong, but if an actually good one is bought for £20 and you are fortunate enough to get £150 for it, you have done perfectly right, and there is nothing derogatory in it. We claim a lot—I think that was one of the stanzas Mr. Cox read out to us—but have not done much,

or words to that effect. It may be true, but I have not heard men make very great claims. We claim to be professional men—so we are. We claim to be scientific men—are we not scientific? And we claim to be honest, to be progressive, and have we not shown that we are progressive? Etiquette was mentioned. Professional etiquette, I consider, is to treat a man in the way you would have a man treat you. When you get to anything more specific than that you are pretty sure to go wrong. (Applause.)

The PRESIDENT then asked if any other gentleman wished to offer any remarks, and there being no response, said it does not quite appear whether the meeting, as a whole, endorses the condemnatory remarks of Mr. Cox, or consents to accept Mr. Hunting as champion on its behalf. Certainly there is good ground for the essayist's strictures on many points. Mr. Hunting's injunction, "Do to others as you would they should do to you," covers wide ground, and the greatest stickler for etiquette could not desire more. I, for one, hope that in professional etiquette we shall greatly improve, and as regards our other shortcomings, touched on by Mr. Cox, that we shall, in the course of our progress, gradually leave them behind us. (Applause.)

Mr. Cox, in reply, said: I have gained my point, and I shall go home shaking hands with myself, feeling that in some slight way I have done my duty. I am only too pleased that our friend, Mr. Hunting, who is so excellent an incendiary, should have set ablaze my little bundle of faggots. There is little for me to attempt to controvert or reply to. If there are defects, we ought not to be blind to them. If I have over-estimated the facts according to some, I am pleased to find that I am not altogether one in that feeling. I hope not any one of you will encounter the things I have referred to. Wishing that my paper had been more worthy of your acceptance, I thank you for your courtesy in listening. (Applause.)

Mr. WRAGG proposed, and Mr. SHEATHER seconded, a vote of thanks to Mr. Cox for his excellent paper, which was carried unanimously, as was a vote of thanks to Mr. Wragg for his *post-mortem* specimen.

The PRESIDENT announced that a special meeting would shortly be held to consider the arrears in subscriptions, and whether or not certain gentlemen in arrears should be struck off the list in accordance with Rule 12 of the Society.

SIDNEY VILLAR, *Hon. Sec.*

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the above Association was held at the First Avenue Hotel, Holborn, London, on the 30th November, F. W. Wragg, Esq., President of the Association, in the chair.

After the minutes of last meeting were read and confirmed, Mr. Sydney J. Blanchard, M.R.C.V.S., Highworth, Wilts, was unanimously elected a member of the Association.

The Hon. Secretary then read the Report of the Instrument Committee, authorising the President to purchase the following instruments, viz., Professor Robertson's tooth shears and forceps; Professor Pritchard's tooth-forceps; Gowing's tooth-chisel; Arnold's tooth-forceps; double tooth-rasp; oak case covered in leather.

The President placed the case with the instruments on the table.

Rules were then adopted for regulating the loan of the instruments to members of the Association.

Mr. J. P. S. Walker, Hon. Treasurer, read a statement of accounts for the past year, which showed a satisfactory balance in favour of the Association.

The following office-bearers were unanimously elected for the ensuing year: President, Mr. G. A. Dreeve (Abingdon); Vice-Presidents, Mr. A. (Wheatley) (Reading), Mr. W. Wilson (Berkhamsted), Mr. F. W. Wragg

(London), and Mr. H. Kidd (Hungerford); Hon. Treasurer, Mr. J. P. S. Walker (Oxford); Hon. Secretary, Mr. H. Kidd.

It was unanimously resolved to hold the annual meeting in February, at Reading.

The Hon. Secretary announced that he had received on behalf of the Association two volumes from Professor Frank S. Billings, Director of the Pathological College of Nebraska—one on Yellow Fever, and the other on Swine-plague; and upon the motion of Mr. Simpson, seconded by Mr. Wilson, it was decided that the thanks of the Society be forwarded to the gentleman who had sent them.

DISCUSSION ON PROFESSOR WALLEY'S PAPER ON OPHTHALMIA.

The PRESIDENT said, Our next business is the discussion on Professor Walley's paper, which has been printed and circulated amongst the members, and I must say it is an exceedingly interesting one. Professor Walley came all the way from Edinburgh for the purpose of reading it, and I should like to hear any remarks that our members may have to make respecting it.

Mr. HURNDALL: I have not had the opportunity of reading the paper very carefully, but it appears to me, from my own view of the question, that Professor Walley has gone into the subject very deeply and closely, and probably far more so than, in ordinary practice, we should ever have had our attention drawn to it. There are two forms of Ophthalmia which strike me as most likely to demand our notice—one in the horse, which Professor Walley describes as the superficial form, and which is of deep interest to us; and the second that in the dog. The first, so far as my experience has gone, and that has been for some years now, strikes me as arising mainly from two causes—from noxious gases, or from draughts or cold winds. That in the dog, I believe, as a rule, follows Distemper; and I have formed the opinion that that is a specific Ophthalmia, because I have always been of the opinion that Distemper is a specific disease. Of course there are various opinions held as to its character, and there are many forms of illness which dogs suffer from which are not attributed to Distemper, but which I think may still be recognised as having some connection with Distemper. This I have noticed develop after a dog has got over the worst part of an ailing: it seems generally to settle itself in the eye, and unless treated at once, it may lead to ulceration of the cornea, and that I take to arise from the specific virus associated with Distemper. There is one point of which Professor Walley does not take any notice—namely, a remedy which I have found extremely useful, nitrate of silver, both for external and internal application. I observe that Professor Walley remarks that where there is purulent Ophthalmia the bi-chloride of mercury is mentioned as a remedy; but he speaks of it as a germicide, and from that it would seem that he has satisfied himself that it is a germicide. However, I have been instrumental in curing it with bi-chloride of mercury administered internally and warm water externally. There is one other point Professor Walley speaks of, viz., the usefulness of arnica, and I can confirm that in cases of traumatic Ophthalmia, but not in any others. Arnica is a specific application for all injuries of a traumatic character if used in appropriate strength according to the delicacy of the organ, and so likewise is bichloride of mercury as prepared by those very much maligned gentlemen the homœopathic chemists; and according to the strength and size of the animal I should give 5, 10, or 20 grains of mixture prepared on the scale of 1 in 1,000.

Mr. WILSON: When we are speaking of the effects of a drug which will kill germs, and which you intimate this special form of disease to include, I think we should satisfy ourselves as to its strength and potency to accomplish its object. I know that bichloride of mercury is generally

accepted as one of the best agents we can employ; but when you give it in these infinitesimal doses it is a question whether it can be efficacious.

Mr. HURNDALL: Well, we understand that Professor Walley considers this form of Ophthalmia should be treated with a germicide, and I may remark that I have used it internally, whilst he has used it externally, and have cured various forms of Ophthalmia; therefore it does not really matter whether it is a germ or whether it is not; but, quite apart from that, you will find that wherever you can get a chemical test, by the use of the proportions I have named, it is quite capable of exterminating germs. I don't look upon it as a question of amount at all, since a very minute portion—a far less portion than I have named, in fact—is discernible by chemical tests.

Mr. JONES: In purulent Ophthalmia I have found quinine the best and most efficacious thing that I have tried. I dress it with a camel's-hair brush in the proportion of five grains to the ounce.

Mr. KIDD said he had on several occasions observed Ophthalmia in sheep, very few in a flock escaping the attack, which he thought was due to grazing on pasture which was grown on poor, thin soil, and where there was a large proportion of long grasses. The attack was always most severe when there was a succession of heavy dews, and he considered that whilst the sheep were grazing these long, wet grasses came in contact with the eyes, injuring them, so that ultimately it produced Ophthalmia. The treatment was simple, and in most cases successful: change the pasture, and give a mild aperient. He had frequently seen in horses' eyes a peculiar dark, glassy appearance, causing defect of vision and opacity. Both eyes are affected alike. He has endeavoured carefully to discover the cause of this ophthalmic condition. The conclusion he has come to is that it is the result of medicine given clandestinely for a length of time, with the particular object of improving the "horses' appearance." He was not able to say definitely what is the particular medicine which had been used, but was of opinion that it was a preparation of antimony, probably tartar-emetic. This condition is very difficult to cure, and would not generally succeed without first thoroughly cleansing the system of the horse, besides external remedies. He should like to hear the opinion of members as to whether there are any agents which, if given internally, would produce this ophthalmic condition, and what is the particular agent.

Mr. WILSON: There is a species of Ophthalmic among cattle and calves that we call sporadic; that is, we get to see a number of animals fall down ill with it, and it seems, unless we apply a more powerful remedy, like nitrate of silver, ulceration will follow in the cornea. I have had a perfect epidemic of it. From what irritation follows in the first instance I don't know, but it has been quite an epizootic.

Mr. SIMPSON: In answer to Mr. Kidd's concluding remark, I may say that I don't know of anything in our pharmacopœia—and I much doubt if there is anything—that you could employ that would produce Ophthalmia. I don't know of any medicines, and think you would have difficulty in finding one.

Mr. WALKER: I think we, as an Association, are very greatly indebted to Professor Walley for his excellent paper. (Hear, hear.) It should stimulate us to investigate minutely the different diseases of the eye which we meet with. I have observed a peculiar disease on several occasions which Professor Walley does not refer to, and which is not spoken of in our textbooks, and which I cannot describe better than term it Snowflake. It is an affection of the vitreous humour. Horses do not go blind from it if treatment be adopted in the early stages.

The PRESIDENT said, I think our thanks are due to Professor Walley for his kindness in coming among us, and giving us such a highly interesting paper. (Hear, hear.) I should much have liked it had Professor Walley

entered more into Cataract, because that is one of the principal diseases of the eye we are called upon to give an opinion upon; and there is more often a difference of opinion as to whether or not it is Cataract than upon any other disease on which we are called to give an opinion. I have seen horses with Cataract that were able to jump and trot, and to avoid an obstacle quite as well as those which possessed their normal sight; and I am of opinion that they do not interfere with the sight—at all events, not for many years. I remember a horse that was bought by me; it was suffering from Cataract, and was in as good a state at the end of that time as at the beginning. I brought the case under the notice of my friend Professor Pritchard, and he remarked that he would not like to ride the animal over a fence. Well, we set up a bar some two inches square, and she cleared that as many times as I liked to ask her, evidently showing that although she had Cataract in each eye, it did not affect her vision. She was subsequently sold to a master of hounds, and was used hunting in Essex during the cub-hunting, where it is often very dark on account of the overhanging bushes and trees, but she never once put a foot wrong or had a fall during the whole season.

Mr. HURNDALL said I did not notice Argent. nit. as a remedy. On page 12 of the reprint of my paper I refer to its use in Corneal Ulceration, and in reference to its use in purulent Ophthalmia I classified it as a germicide, though I did not specify it particularly. I fail to see what influence it can have on the eye when given internally. He also questions the germicide action of bichloride of mercury, and yet he asserts that it is useful in traumatic injuries. In what way is it useful here except as a germicide? I should have thought the germicide properties of bichloride of mercury were sufficiently proved by this time. I do not give it internally, but I give Calomel or Hydrarg. c. cretæ largely, though only as alteratives and from the well-known effects of mercury in facilitating the removal of inflammatory products. It would be absurd to give mercury internally as a germicide.

Mr. JONES—I have tried quinine as an extra remedy, but did not get good results from it.

Mr. KIDD asks if there is any agent known that will produce Ophthalmia? No, but the intra-venous injection of sugar or salt will produce temporary Cataract (opacity).

The "Snowflake" Cataract, or "Scintillating" Cataract, mentioned by Mr. Walker, I have seen twice in my life. It is associated with liquefaction of the vitreous humour, and is due either to breaking up of an old cataractous lens or to breaking up of an exudate.

The PRESIDENT regretted that I had not referred to Cataract. I could not possibly do so in such limited space, especially as it is a sequel of Ophthalmia, but I may remark that his statement as to a horse being able to see with Cataract is contrary to all practical observation, and unless the Cataract be small and out of the line of vision, the retention of sight would be contrary to all physical laws.

After a cordial vote of thanks was given to Professor WALLEY and to the retiring PRESIDENT for his conduct in the chair, the meeting terminated.

H. KIDD, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE last quarterly meeting of the year was held at the Queen's Hotel, Leeds, on October 26th, the President, Mr. P. Deighton, in the chair. The following members were present, viz.:—Messrs. George Whitehead, G. T. Pickering, J. M. Axe, R. L. Robertson, W. Lodge, George W. Beck, G. W. Carter, Joseph S. Carter, A. W. Briggs, Thomas Fletcher, A. McCormick, Joe Clarkson, J. E. Scriven, A. W. Mason, M. Robinson, H. Snarry, Herbert Pollard, G. E. Bowman, and the Secretary (W. F. Greenhalgh). Messrs.

C. Phillips, A.V.D. (15th Hussars), E. W. Anderton (student), and Rastrich were present as visitors. Apologies for non-attendance were read by the Secretary from the following: Professors Williams and J. Axe; and Messrs. Ben Smith, F. Danby, James Best, H. Cooper, P. Carter, Greaves, etc. After the minutes of the previous meeting had been read and confirmed—

The SECRETARY said he had received on behalf of the Society two books from Mr. Billings, of the Patho-biological Laboratory, University of Nebraska. One was on Swine-plague, and the other on Southern Cattle-plague.

Mr. BRIGGS proposed, and Mr. G. CARTER seconded a resolution, which was carried, that the Secretary be instructed to acknowledge the receipt of the books, and to thank Mr. Billings.

The SECRETARY read a letter from Professor Axe, in which that gentleman stated that at the next meeting he would be willing to contribute a lecture on Laryngotomy and Laryngo-tracheotomy.

Mr. LODGE proposed, and Mr. CARTER seconded, that Professor Axe be thanked for his offer, and that it should be accepted.—Carried.

The PRESIDENT drew the attention of the members to the fact that he had communicated to every Member of Parliament representing Yorkshire constituencies, asking them to use their endeavours to procure an exemption from the horse-tax for the horses of veterinary surgeons. He had only had two replies out of the number, but both were favourable.

Mr. CARTER proposed that "the matter be entered on the minutes," seconded by Mr. Mason, and carried.

Mr. LODGE related the case of a black mare, which had been lame for a period of six months or so. She had been treated for various lamenesses by both himself and three or four other veterinary surgeons, and he was bound to confess that he was not at all clear as to the nature or cause of the lameness. He had had the animal brought from Dewsbury, and he invited the members to express their opinions on the matter. At a later stage the members adjourned for an inspection of the animal. Various theories were promulgated, but no definite opinion was formed on the matter.

Mr. FLETCHER exhibited a morbid specimen of intussusception of the jejunum of a St. Bernard dog, and related the history of the case. The animal had been noticed to be in anything but its ordinary health for a fortnight before Mr. Fletcher was consulted, but the animal died shortly after. There was an entire absence of the usual symptoms present in such cases, and the length of time the animal survived after the commencement of the intussusception, in which there was sufficient room for the passage of the fluid fæces which alone had passed from the animal, he considered was most remarkable.

Other morbid specimens and interesting cases were related by Mr. Whitehead and Mr. George Carter, the latter of whom related two cases. The first case was in a cow which had lately been in œstrum, and had been seen to be ridden by the other cows in the field with her. At night a slight enlargement was observed upon the lumbar region of the back, about the size of a man's fist. This gradually enlarged, until about a fortnight afterwards, when he found the cow to present the appearance of a camel. The swelling extended from the median line of the spine down each side of the animal to about the lower border of the ribs, and was as nearly like a large bed bolster placed across the back as anything he could describe. He opened the swelling at the most dependant part of each side, and inserted his hand, and removed six pailfuls of coagulated blood. The wounds healed rapidly, with very little suppuration. The second case was similar in character, but the swelling extended over the outer surface of the stifle joint. He considered the cause in both cases to have been external violence, but he would like to know how, and from what vessel, such a large quantity of blood could be thrown out into the subcutaneous tissue of the lumbar region, and in neither case did any bleeding take place after the evacuation of the swelling.

The PRESIDENT, Mr. FLETCHER, and others had seen similar cases, but not of the magnitude of the first case of Mr. Carter's, and it was thought that in some regions it would be difficult to distinguish them from ventral hernia.

Mr. PICKERING (York) read a paper on

SOME DISEASES OF THE BOWELS.

He said, Mr. President and Gentlemen,—In bringing before you this afternoon subject of Some Diseases of the Bowels, I think you will be all prepared to admit the importance of the subject, which, in the discharge of our professional duties, so often and so prominently comes before our notice. Taking the elementary tract as a whole, we find the intestines most generally affected in the horse, the stomach being small in comparison to the size of the animal and the remainder of the digestive tract.

Amongst some of the causes of the disease may be mentioned age. We know that aged horses, as a rule, are more liable to suffer than young ones: there is not the amount of tone in the system; they cannot stand the amount of bulky food, the digestion not being so good and so quick, the food not being properly masticated, on account of the teeth often being faulty; the circulation not being so good, the amount of gastric juice secreted is sometimes not sufficient, aged horses often being gross feeders. In some horses Colic symptoms are often caused by worms, especially those which are taken up from grass, and when in a weakly condition.

Hereditary Causes.—Are diseases of the bowels hereditary? Why not? Cannot an amount of susceptibility be transmitted from parent to progeny? Can an animal inherit diseases such as those of the bones, for example, Splints, etc.? May there not be a diathesis transmitted by which the structure of the bowels is more susceptible to disease in some than in others? If cases were traced carefully back, might we not find that the sire or the dam had been subject to some disease of the bowels or other? Take, for example, three or four horses in a stable; the same surroundings, the same diet, the same amount of work, yet one has an attack of Colic, for which it is impossible to trace the cause.

Are the diseases of the bowels in some cases epidemic? How is it we so often find several cases together in one district? hardly ever a single case? On the other hand, are they merely coincidents? I admit the weather has a great deal to do with the prevalence of the disease. How often, with sudden changes especially, do we have numbers of cases, which are often a boon to us, although a misfortune to others. I might say cold, wet, and sudden change are often predisposing causes in these diseases, especially those of an inflammatory type.

Dietetic errors, I think, we must all admit, are amongst the most important, as being the cause of those cases of a Colicky nature; either the food has not been properly masticated, bolted, the quantity taken too much, improper quality, change of food from soft to hard, etc.

Parasites of different kinds are often the cause of disease, and no doubt all of us can call to mind cases that have been caused by these troublesome creatures. I might mention a case in passing, briefly. An aged mare the owner had had for two or three years had been suffering from an injury to the neck. There had been a good deal of suppuration, etc. After treatment for a short time, the mare seemed to be on the improve, when, suddenly, violent abdominal symptoms set in. The mare had violent continuous abdominal pains, pulse feeble, respiration 50, temperature 104, mucous membranes highly injected, and all symptoms of acute Enteritis. Anodynes injected, fomentation, etc., were tried without avail, and nothing seemed to relieve her. She died about five hours after being discovered. The *post-mortem* examination revealed large

quantities of strongyles, ascari, and bots. Some of the strongyles had penetrated through the bowels, setting up irritation, etc.

Calculi of various kinds may also be enumerated.

Temperament.—Horses of a sympathetic temperament, as a rule, are more predisposed to these diseases than those of a dietetic nature, those of a sanguine being more violent and difficult to manage.

The cases I wish more especially to bring before your notice are those of an inflammatory type and those of a non-inflammatory type.

Now, cases of Enteritis, from the first, are they specific? or are they developed, as it were, from cases of Colic, unrelieved obstruction, etc., which they are sometimes? I have no doubt there are hundreds of cases of Colic to which professional men are never called to attend, each of the owners having his own specific. How often, also, are we called too late, when, if we had the chance, we would rather not have anything to do with the case, as we can do no good as regards effecting a cure. We can tell after, an examination, that cases are hopeless.

I will, for the sake of argument, as the farmers say, divide them into two classes—Colic and Inflammation.

Spasmodic Colic.—One of the most frequent, affecting all kinds of horses, due to spasm or violent muscular contraction of the muscles of the bowels, pressure on the nerves causing the most violent pain. This disease may be induced by an over-distended state of the bowels, or due to an interference with the nerve supply of the part. The symptoms are animal pawing, restless, whisking the tail, curling himself up, throwing himself violently down, rolling, turning on the back with the legs in the air, getting up, looking back, ease for a while, and then resumption of pain, attempts to stool, and the sphincter of the bladder being contracted, the effort is in vain; periods of freedom from pain, and the animal will sometimes eat a little; pulse almost normal, 45 to 50 and full; temperature 100° F.; respiration, except where knocking about, normal. As treatment, I would recommend anodynes, stimulants, back rake, clysters, fomentation or blister, and sometimes use catheter; do not allow the animal to roll, and keep him quiet if possible.

With regard to Apoplexy of the bowels, there has been a great deal of discussion on the subject. I have found in the heavier breeds that there had been no tympanitis at all. The bowels were congested—sometimes the large bowels, and sometimes a portion of the small. The most important thing in the treatment, I consider, is the diagnosis of the case. We should ascertain whether the animal has suffered before from Colic. In an ordinary case of Colic I give a five-dram physic-ball. Linseed oil, I find, is most generally used for horses suffering from an affection of the bowels. It seems to be the first thing that a horse-keeper or a farmer flies to. I wish to ask this question: In cases of obstruction of the bowels does giving a pint of linseed oil, warm, in any way interfere or accelerate the disease?

Croton oil is only resorted to in very violent cases. Magnesia is not much used. In some cases very large quantities of purgatives, such as aloes, can be given, and the animal ultimately recover. I have found physosdigmia to have a very beneficial effect. I have injected it in various places, and in some cases I have found it to act within an hour.

Anodynes are most important in cases of great pain, for nothing relieves the animal so well. Chloral I have tried in some cases, but I prefer opium. I have found chlorodyne of very great service. It is a very good anodyne, and possesses great stimulating qualities.

Stimulants.—I think stimulants in small quantities a very excellent protective medicine. In cases where fomentation can be carried out I believe there is no treatment to excel it.

Inflammation of the bowels is one of the most fatal diseases the horse is

subject to, and is very often taken for Colic. The diagnosis in this disease is most important, as a mistake made at the outset, in the treatment, only hastens the fatal issue. We must excuse a non-professional man from making a mistake in the diagnosis, but we should be most careful, as very often the inexperienced say that after a certain length of time a bad case of Colic or obstruction is a case of inflammation.

Symptoms.—Anxious expression, pawing, restless, lying down more carefully, as a rule, than in Colic, rolling, sweating, cold extremities, quivering of muscles, whisking tail, abdominal muscles fixed and tense, tenderness on pressure, back arched, anxiously looking back, lying down, pulse first quick and full, 60 to 80, afterwards quick, feeble, and thready, temperature 103 to 105° F., respiration 30 to 60, mucous membranes injected, etc., etc. It depends in which stage we see the patient as to the course of treatment we shall adopt. If we see him in the first stage there is a chance, when the pulse is full, quick, and wiry. As to treatment, in the first stage I bleed the animal, use anodynes, fomentation, and blister.

Bleeding.—If I had been asked three years ago to bleed a horse or a cow, I would not have done it. I at that time had never seen but one bled, and that was when Professor Robertson once showed us, at the College, how the operation should be performed. I now, however, believe that in protracted cases of abdominal pains bleeding is beneficial. How is that? In certain cases you all know how long it is before medicine acts. It goes into the system and does not pass along the bowels; but by bleeding—in cases where there is a full, hard pulse, and where the animal is in violent pain, I believe bleeding is of the utmost advantage; I can name scores of cases where it has been of the greatest benefit. In cases of obstruction of the bowels, after the obstruction has existed for some time, I believe blood-letting is of great value. During the last year or two I notice the medical opinion is much more in favour of bleeding, but not indiscriminately, for I believe all the evil effects attributed to the operation are in its indiscriminate application.

Mr. FLETCHER asked what was Mr. PICKERING's definite system by which he diagnosed Apoplexy of the bowels.

Mr. PICKERING said he had found cases of Apoplexy of the bowels in heavy horses, horses getting a large quantity of bulky food, and horses that had been subject to attacks of obstruction of the bowels. He thought it was caused by a strain.

Mr. FLETCHER said his experience was that there was scarcely a member of the profession who could diagnose a case of Apoplexy of the bowels. It was a matter of the greatest difficulty. With regard to what Mr. Pickering had said as to hereditary causes, no doubt the digestive organs of animals, like those of the animal man, varied greatly in their power of assimilation with regard to the different foods which might be introduced into the system. In cases of non-assimilation of course abdominal pains would follow, and the digestive organs be thrown out of gear. There could be no doubt that the weather had a detrimental effect on the horse. After warm, settled weather let there but come on some cold showers, and veterinary surgeons were speedily called to one case and then another. With regard to bleeding he was of the same opinion as Mr. Pickering. He had bled more during the last three or four years than he had done in the twelve or fourteen years previous.

Mr. G. CARTER did not think Apoplexy of the bowels was so difficult to diagnose as had been stated. He found that the cases almost always occurred in rough, coarse-bred cart-horses, and he had never seen a case in a high-bred horse, or a case that lasted, from the time the animal was seized, more than twelve hours. In most cases they would find that the large bowel was very much bigger than it was naturally.

Mr. FLETCHER spoke of a case of Apoplexy of the bowels he had had under treatment where the animal lived no less than twelve days. In such cases the difficulty was to get any medicine, especially purgative, to act at all. In one case the animal lived eight days, and in another twelve days. The pain was not continuous, but as soon as the horses took drink or food the pain commenced again.

Mr. JOS. CARTER had seen many cases lasting from eight to twelve hours, but he never knew one to last three or four days. He thought linseed oil was very useful; he liked it better than castor oil, and there was not as much danger as in using aloes.

Mr. BOWMAN (Leeds) thought there was great credit due to Mr. Pickering for the admirable paper he had read to them. He had no doubt that bleeding had saved the life of many a horse, and would do so again. He went on to describe the cases of two horses he had had under treatment, which for no apparent reason fell off rapidly in condition, and ultimately died. The spleen of one he found to weigh two and a half stones. The diaphragm was covered by small tumours. The spleen of one of the animals he took to the Leeds Medical College, and he and Dr. Jacob made a microscopical examination of it, but they could find no microbes in it at all. The deposits were exactly like warts; they were not tubercular.

Mr. G. CARTER stated the case of a bay horse he examined and passed sound. He worked for about five months, and then was under treatment for Pleurisy, but he died in four days. His attention was called by the knacker to the lungs, which weighed no less than eight stones, the spleen weighed ten to twelve pounds, and the kidneys were also affected. The substance of the liver was studded over with a lymphoid deposit, and he concluded it was a case of Lymphadenoma. He sent a specimen to Professor McCall, asking his opinion, and the reply was to the effect that it was one of the finest cases of Lymphadenoma that he had ever seen.

Mr. SNARRY (York) remarked that he had had under treatment the well-known racing mare Apology. She pined away, and was ultimately shot. The organs were covered with a deposit similar to that described by Mr. Bowman. Some years before the mare had had a similar attack, but got over it.

Mr. BRIGGS (Halifax) said he relied upon enemas in cases of stoppage of the bowels, and had found the best results from such treatment. He had never known a case of Apoplexy of the bowels last above twelve or fourteen hours.

Mr. FLETCHER: I have had cases of Apoplexy where the animals have lived six, seven, and twelve days.

On the motion of Mr. WHITEHEAD, seconded by Mr. AXE, a hearty vote of thanks was accorded to Mr. Pickering for his valuable paper.

The Hon. Treasurer (Mr. SCRIVEN) submitted his annual financial statement.

Mr. CARTER proposed, and Mr. BRIGGS seconded, that the statement be adopted, and this was unanimously agreed to.

On the motion of Mr. W. F. GREENHALGH, seconded by Mr. BOWMAN, Mr. Lodge, of Dewsbury, was elected President of the Association for the ensuing year.

Mr. Deighton, Mr. Bowman, and Mr. Briggs were elected Vice-Presidents, and Mr. Greenhalgh and Mr. Scriven were re-elected Hon. Secretary and Hon. Treasurer respectively.

The meeting concluded by hearty votes of thanks being accorded to the late President, the Hon. Secretary, and the Hon. Treasurer for the valuable services they had rendered to the Association during the year.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

ON November 16th a meeting of the above-named Association was held at the Hop Market Hotel, Worcester. Mr. R. C. Trigger, Newcastle-under-Lyne, the President, occupied the chair, and amongst those present were Professor W. Owen Williams, Edinburgh; Mr. J. B. Wolstenholme, President of the Lancashire Veterinary Association; Messrs. J. M. Parker, H. M. Stanley, Mark Tailby, Birmingham; H. Olver, Tamworth; R. H. Cartwright, Beddard, Wolverhampton; F. B. Jones, Leicester; F. Fletcher, Coventry; W. S. Carless, F. H. Pinkett, A. J. Cayless, Worcester; F. W. Barling, Ross; T. H. Merrick, Northampton; Hills, Leamington; Over, Rugby; Chambers, Dudley; R. R. Cole, John Firr, Hinckley; George Smith, Tunstall; G. Wartnaby, Burton-on-Trent; James Blakeway, Stourbridge; William Carless, Stafford; H. Collett, West Bromwich; the Honorary Treasurer, F. Blakeway, Kidderminster; and the Honorary Secretary, J. Malcolm, Birmingham.

The minutes of the last meeting having been read and confirmed, the Secretary announced the receipt of letters regretting inability to be present from Sir H. Simpson, Windsor; Professors McFadyean, Williams, and Walley, Edinburgh; Messrs. Pyalt, Notts; Taylor, Manchester; Leather, Liverpool; Freer, Uppingham; Barling, Newnham; Captain Russell; Messrs. Golden, Martham; Green, Dudley; Barber, Rugby; Pritchard, Wolverhampton; Goodall, Melton Mowbray; and Wragg, London.

It was stated that Mr. H. R. Perrins, Worcester, had written a letter resigning his membership of the Association, but it was decided to ask him to reconsider the matter.

On the motion of the President, seconded by Mr. Parker, Mr. W. Hunting, of Fulham Road, London, editor of the *Veterinary Record*, was elected an Honorary Associate of the Society.

THE CURE OF ROARING.

Mr. F. B. JONES, Leicester, then proceeded to exhibit and explain his tracheotomy tube and instruments used in the laryngeal operation for the cure of Roaring. He said that, as they must all know, Roaring was a paralysis of muscles, ending in inability of those muscles to open what Mr. Clarke called the door of the larynx for the admission of air. The paralysis of the muscles could not be cured, and the only thing was to do something to relieve the breathing, either by an operation on the larynx or by making below an auxiliary opening, and inserting a tube for the animal to breathe through.

Mr. JONES showed, by demonstration on a larynx of a horse, the methods employed by him for the excision of the left vocal, and of both vocal cords, of the cartilage of Santorini, for the division of the arytenoids or separation of both arytenoids, and for the entire removal by a lateral operation from outside of the left arytenoid cartilage. The various ligature processes were next explained, and a description of the operation of tracheotomy, with practical demonstrations, followed. When inserted, the tube might be taken in and out once a day; at night the aperture should be closed by the plug. In anæstheticising a horse for the laryngeal operation he employed the A.1, C.2, E.3 mixture—alcohol one proportion, chloroform two, ether three—as it diminished the risk of shock to the heart. When they had got the horse under the influence of that mixture, they might go on with chloroform. With care they might in this way keep a horse down under its influence for two or three hours. It was necessary to bear in mind that in casting a horse and preparing him for an operation, a considerable shock was inflicted, and if they administered the anæsthetic too hastily they might get stoppage of the heart's action and of breathing. It was best, therefore, to wait a few minutes, and to watch the animal's breathing.

The reason why he preferred the A. C. E. mixture was because the ether

was most volatile, and was given off most freely ; when the mixture was first inhaled it was more stimulating, and compared with chloroform, less depressing to the heart, which would continue to pulsate for a short time, even when breathing was stopped.

Chloroform was less stimulating, and when concentrated had a peculiarly depressing effect on the heart's action, and if used carelessly, by an inexperienced person, total arrest of breathing was likely to result. If the breathing ceased for a moment they should perform artificial respiration, which was best done by sitting up and down on the horse's side. In this way they could make the horse breathe for several minutes. Directly they saw any sign of stertorous breathing they should pull the horse's tongue out of the mouth, and draw it forward to relieve any mechanical obstruction. This also drew the epiglottis forward, and enlarged the space for the admission of air. Stertorous breathing was liable to occur in roarsers. He found from experience that it was necessary to prepare a horse for a couple of days before an operation, especially if it was a long one and the horse had to be anæstheticised ; otherwise there was great trouble from abdominal pains, which were owing to the paralysis of the nerve centre of the bowels produced by the anæsthetic. Before an operation he therefore gave a horse plenty of linseed and mashes. They should never be in a hurry to get the horse up on his legs after chloroform ; if they did, being stupefied from the effect of the anæsthetic, he would not have the proper use of his limbs, and might tumble about and hurt himself. The best way was to let the horse sleep off the effects of the anæsthetic, so long as he was breathing properly. He was not able to lay down any rule as to the quantity of chloroform and ether that should be used, but he had never been able to put a horse under the influence of chloroform with an ounce and a half. It was no use beginning the operation unless the patient was thoroughly under the influence of the anæsthetic, quite insensible to pain, and showing a perfect relaxation of his muscles, and abolition of the conjunctival and other reflex movements. In one case, he had used as much as thirty-six ounces of the A. C. E. mixture. The mixture should always be made up fresh before being used. The operator should ascertain the patient's pulse and heart action. A quick pulse, as a rule, ensured the patient getting under the influence of the anæsthetic quicker ; a full pulse and strong action of heart required more chloroform and ether. In several cases he had noticed a paralysis of the off fore limb, but he could not say from what this arose. He did not know that chloroform had any local effect. The paralysed limb got right, but it was a great bother for a time. Now, Mr. Fleming claimed to have been the first to have proposed the excision of the left vocal cord for the cure of roaring, and he had been credited with having obtained the greatest achievement in veterinary surgery by so doing. He should like to say a word or two on this claim. It appeared to him something like an attempt to obtain credit under false pretences. Mr. Fleming said no one ever opened the larynx in this country before his publication this year ; but Mr. R. H. Clarke and Mr. Horsley did it in 1887, and Mr. Gamgee some years ago. From a work by Dr. Möller, of the Berlin Veterinary School, it appeared that twenty-five years ago K. Gunther had performed these operations, viz. :—(1) excision of both vocal cords ; (2) excision of left vocal cord ; (3) excision of left vocal cord and sacculus laryngus ; (4) complete removal of arytenoid cartilage ; (5) and various partial removal of arytenoids. He met with no success except in No. 5—partial removal of arytenoids. Gerlach performed a partial excision of the arytenoid ; result, unsatisfactory. Stockfleth excised the upper part of the arytenoid and applied cautery ; result, unsatisfactory. Various operators had repeated Stockfleth's operation, but also with unsatisfactory results. An operation for the excision of the vocal cord was de-

scribed by Gouband in 1869. Möller himself had performed various operations: (1) excision of the vocal cord; same result as Gunther, quite useless; (2) opening crico-arytenoid joint from incision through cricoid and first two rings of trachea; (3) myotomy of left crico-arytenoidens posticus, with a view to shortening muscles from cicatricial contractors; (4) fastening arytenoid and thyroid together by ligature; (5) complete excision of arytenoid from within. There were some favourable results from the last three forms of operation, especially No. 5. The work from which Mr. Jones quotes the latter is: "*Das Kehlkopf Pfeifen der Pferde Hemiphlegia Laryngis*," by Dr. H. Möller, Veterinary School, Berlin; published at Stuttgart, 1888. In conclusion, Mr. Jones said he did not believe they yet thoroughly knew the physiology of the larynx. They wanted to know more precisely the action of the parts during life, during breathing. Up to the present time the operation for the removal of the vocal cords was in an experimental stage.

The PRESIDENT remarked that they were all indebted to Mr. Jones for the able and kindly manner in which he had brought the subject before them. It was decided to defer discussion till a future meeting, when Mr. Jones promised to again deal with the subject.

TUBERCULOSIS.

A number of specimens showing tubercle bacilli and Tuberculosis from the various domestic animals, kindly lent for the occasion by Professor McFadyean, were exhibited under microscopes. In most specimens the bacilli were seen very clearly, and were particularly distinct in sections from a cat's lung and from the glands of a horse. Professor Williams also exhibited a well-marked specimen of tubercle bacilli in expectorate.

Mr. OLVER, in opening a discussion on Tuberculosis, said their President had suggested to him at first that they should limit it to urging upon the powers that be the advisability of including this disease in the provisions of the Contagious Diseases (Animals) Act. He was able, however, to inform the President that it was practically decided to so include it, and no doubt in a short time it would be an accomplished fact, and known to the country generally. He thought they would all admit it was quite right Tuberculosis should be included with the other diseases named in the Act. He need not go into any detailed history of the subject. They were all aware that comparatively few years ago it was a disease about which very little was known. It was called by various local names in different parts, such as "Grapes," "Wasters," and "Angleberries;" occasionally animals were found to die from it; but the true pathology of the disease was not recognised. There were all sorts of assumptions with regard to it, but it was not until microscopes of considerable power were used in 1880 or 1882 that the tubercle bacillus was recognised. Since that time a great advance had been made in knowledge of the subject, and also, it would seem, in the progress of the disease itself.

Veterinary surgeons who practised in country districts knew that amongst cattle particularly it was one of the most prevalent of diseases; and he believed himself it was the cause of greater loss to agriculturists than all the other contagious diseases put together. With Cattle-plague and Pleuropneumonia the animals were slaughtered, and they knew the end of it; but Tuberculosis was so insidious, so general in its attacks.

All kinds of animals were affected, and he believed it was no exaggeration to say it was one of the greatest losses with which farmers had to contend. He remembered that at the first Veterinary Congress held in London, he thought in 1880, an able paper on Tuberculosis, written by Mr. Smith, was discussed. At that time the tubercle bacillus was not known, and it was generally considered, not only by the profession, but by the owners of animals,

that the disease was attributable to a great extent to in-and-in breeding, to feeding for early maturity, and some went so far as to say that artificial manures had a good deal to do with it. It seemed strange that since more had been known of the disease it had made a considerable advance. Unless they could put a stop to it—and that was a difficult matter, because of its insidiousness—it would become an even greater bane than it now was. It was unnecessary for him to deal with the symptoms of the disease. There had been some letters lately in the journals on the subject, and one writer said that unless they could detect Tuberculosis in the early stage they did not know their business. But he considered it was a most difficult disease to detect in the early stage, and even in the later stages many would have difficulty in distinguishing between consolidated lung, Pleuro-pneumonia, and Tuberculosis. He saw a good suggestion made the other day, which might probably be worth trying.

It was that they should inoculate some guinea-pigs with tubercle matter, which would generate the disease in those animals, and so enable them to satisfy themselves that it was Tuberculosis. He had spoken more particularly of the effect of the disease on the bovine species, but it was generally acknowledged that almost all animals might be attacked by it, not exactly in the same form, but very much on the same lines. It was thought a few years ago that horses were not susceptible to it, but there had been, he believed, some very clear cases in which it was shown horses were susceptible. Dogs, cats, and rabbits were susceptible to it. Pigs also had it—his experience was that they did continually. Some time ago he was speaking on the subject to a distinguished member of the profession, who said he knew of an instance of Tuberculosis in pigs. In going round the slaughter-houses of his town, he (Mr. Olver) was led to believe that, in that district at least, the pigs were quite as liable to take the disease as the cow, if not more so.

Poultry, it was proved, were susceptible to it. He remembered reading of the case in which a man, leaving his native village in the hills in Germany, where Phthisis had never been known, and serving for a period in the army, where he contracted the disease (Phthisis), went back home and married. His wife died, and so did he from the disease, and the poultry at the house from eating the sputum of the patients became affected, and so conveyed the complaint to the poor people by whom they were consumed, and so Phthisis was spread throughout the village. Tuberculosis was unquestionably communicable from animals to man, and *vice-versa*; and this made it more important than many other diseases with which they were acquainted. It had been a question of some discussion as to how it might be communicated from one animal to another, but he thought it was pretty generally recognised at the present time that it might be handed from one animal to another by ingestion of food or milk, inoculation, or inhalation.

It was said one bull might spread it amongst a whole herd, and the bacillus had been detected in the placental membranes of the female.

He believed there had been a question up to a short time ago, as to whether milk could be affected and could transmit the disease.

Professor Brown asked him if he met with a bad case to send him the living animal, and shortly afterwards, finding a cow, which had calved three days before, suffering from acute Tuberculosis, he purchased her and sent her to the professor. He wrote back that, upon examination, he found the milk teeming with bacilli. Yet, so far as one could see, when the cow went from his neighbourhood, the milk was comparatively healthy, and if she had not been so disposed of the owner would have sold the milk. That being so, he thought there was no doubt milk would transmit the disease to the human population; the infantile population particularly were very liable to become

affected with Tuberculosis (Phthisis). He believed it was generally understood that the Tubercle bacillus was not found, as a rule, in the muscles of the animals or in the blood stream, but they knew it might be found in almost any part of the body. It might exist in the centre of a rump steak. It was a question, then, whether the flesh of animals affected should be used for human food. In the Midland counties generally, he believed the flesh of the great majority of these animals was eaten. Speaking generally, no doubt there were few cases in which Tuberculosis followed the consumption of the flesh of diseased animals, but he was inclined to think that in all bad cases the meat should be condemned. It was said, and no doubt rightly, that the disease was more generally found in large towns and crowded districts than in the country. That might be explained by the fact that the parasites would have less effect upon animals in strong healthy condition in the country than upon animals debilitated, as they generally were, in the towns. In the towns, cows were often fed simply to produce milk; they became generally more or less debilitated; their condition was often anything but a natural one; their sheds were in anything but a sanitary condition; and in such a state the diseased particles got a greater hold and increased in numbers, and in the end the death of the animal occurred. One branch of the subject he should like to mention was this: whether the Tubercle bacillus could be found in milk in which the udder itself was not actually affected. It was not an easy matter, in the first place, however, to detect whether the udder was or was not affected. It appeared to him a question whether, as a profession, they should not let it go forth to the public that this disease should be included in the Contagious Diseases (Animals) Act, and as to what would be the best means of escaping the danger which existed from it. If any action was to be taken, he thought it was absolutely necessary that the cow-sheds should be periodically inspected by qualified professional men. At present they knew the majority of dairies were inspected by policemen who knew nothing whatever about the subject. If it became known that the consumption of milk from tuberculous cows was dangerous, the public would compel the Government sooner or later to say that the inspection of dairies should become a matter for qualified veterinary surgeons only, that the inspections should be frequent, and that the inspectors should have power over the animals, and not simply over the cleansing and ventilation of the sheds. As the meat was more or less dangerous, it became a question whether slaughter-houses or abattoirs should not be inspected by veterinary men, who should have the power to prevent the sale of the flesh of animals which had suffered from Tuberculosis. Another thing which was necessary was, that notification of the existence of the disease should be made compulsory under some stringent law. No doubt a great many diseases of this kind were allowed to go on, the animals being put out of the way, and nothing heard of the matter. There should be compulsory notification of the disease, and then a qualified man called in, his opinion to be final, and acted upon at once. In Denmark he was told dairies were inspected every fortnight. He thought that in this country they should be inspected at least once every month or two.

In the course of the discussion which followed, Mr. PARKER said he had heard Mr. Olver's remarks with great pleasure. There was no doubt a great amount of tuberculous meat came to Birmingham. He was frequently consulted as to its fitness for human food, and invariably condemned it. He was astonished to hear Mr. Olver state that a distinguished member of the profession had said that Tuberculosis did not exist in pigs. He had seen it as often in pigs as in any animals. Not long ago he had a case in which there were large deposits of tubercle matter in the vertebræ. He had not seen so much of the disease in sheep as in other animals.

Professor WILLIAMS said he thought, as was the case with the Germ theory, knowledge of this disease had come with such a rush that a great number of diseases not Tubercle were apt to be included with it. They wanted to have laid down some exact rules which would assist them in saying whether an animal was affected with Tuberculosis or not. In cattle there seemed to be two distinct forms of Tuberculosis—that attacking “piners” or “wasters,” and that from which fat cattle, fed for the Christmas market, suffered. He could not understand how it was that a disease due to a specific germ could have two such distinct characters, in one case causing pining, and in the other causing the animal to fatten. He did not think the disease could be exactly the same. He thought there was a tendency, when an animal had Fluke or an enteric affection, and abscesses were formed in the liver or kidneys, as the result of the absorption of deleterious matter from the bowels, to call it Tuberculosis. It was a most difficult disease to diagnose. He was firmly of opinion at present that the horse did not take Tuberculosis. The difficulty they had to deal with in settling the point was that the bacillus of Glanders and the bacillus of Tuberculosis were identical in size and shape. He believed the so-called cases of Tuberculosis in horses were really cases of Glanders. Another thing necessary to learn, was the period of incubation. Mr. Storey had demonstrated that the disease was transmitted by a bull to some cows, appearing in eleven days. He thought the majority of professional men would agree with him that unless there was a tubercle growth in the mammary gland, the milk was not affected. As to Tuberculosis existing in muscle, it was stated in a French work that in two cases which were examined not a trace of the bacillus was found in muscle. He had a specimen of a cow's heart, round which there was an enormous deposit of tubercle growth, whilst there was not a trace in the muscular tissue.

Mr. WOLSTENHOLME said he agreed with Professor Williams, that unless the mammary gland was affected the milk was not likely to produce Tuberculosis. He should think the mammary gland was one of those which were least frequently invaded by the disease. Boiling milk would destroy any bacilli it might contain. He thought they should do all they could to emphasise the point as to the better inspection of dairies, and the necessity of appointing veterinary surgeons to do the work. Professor Williams had expressed the opinion that there were two distinct diseases included under Tuberculosis; he (Mr. Wolstenholme) did not think that was the case, and for analogy referred to the fact that acute Glanders, with its rapid fatality, and chronic Farcy, sometimes lingering for years, were as unlike each other as Tuberculosis in piners and Tuberculosis in fat cattle; yet no one looked upon Glanders and Farcy as two distinct diseases. At one time he thought, like the Professor, that horses did not suffer from Tuberculosis, but he had now seen cases of what he could regard as nothing else than Tuberculosis in horses. Green evidently believed in Tubercle, and in his Pathology there was an illustration of the Tubercle bacilli of horses.

Mr. MALCOLM (Hon. Secretary) said they were indebted to the previous speakers for the lucid manner in which they had dealt with the subject before them. His practice was confined to horses, but he had not seen a case of equine Tuberculosis. Nevertheless he believed in its existence. Professor Williams had told them that he did not believe there was such a thing as Tuberculosis of horses, and that the so-called cases were simply mistaken Glanders, and that there was no difference between the Tubercle bacilli and the Glanders bacilli. But he seemed to have forgotten a very important fact which they ought to bear in mind, and that was the clinical aspect of the case. It was scarcely possible for any one to confound Glanders and Tubercle when looked at clinically. In the one case, they had a highly con-

tagious, rapidly spreading disease, which, if unrecognised, soon spread broadcast over the country; in the other, they had a malady of a very slow, insidious character. Amongst other cases recently recorded, one of what appeared to be hereditary Tuberculosis in the horse, described by Mr. Freer, of Uppingham, was of particular interest. The foals of one dam had died off one after the other from Tuberculosis. These cases could not be confounded with Glanders, and when in such like cases the presence of Tubercle bacilli had been demonstrated by competent authorities, as had been shown them that day, he thought they were fully justified in believing that Tuberculosis of horses did exist. He had seen the disease frequently in pigs, and was particularly struck with the case referred to by Mr. Parker, in which there was a tubercular deposit in the centre of the body of lumbar vertebræ. With reference to the percentage of the disease amongst cattle, it was stated at the British Medical Association meeting at Glasgow by Dr. Carpenter, that eighty per cent. of the cattle sent to the principal meat market in London were affected with it. Professor McCall, at the same meeting, said that twenty-five per cent. would be nearer the mark in Glasgow. In Birmingham it was not so prevalent, still it existed to a large extent. With reference to what had been said as to the danger of eating the meat and using the milk of tubercular subjects, muscle was particularly free from Tubercle, it was usually well cooked, and was not therefore a source of much danger. It was different with milk, which was generally consumed uncooked, and when from a tubercular source was very dangerous.

The PRESIDENT said he thought a resolution should go forth from that meeting, that the time had come when Tuberculosis should be made a contagious disease under the Act. The inspection of meat and milk supply should be improved, and placed in professional hands.

Mr. OLVER, in replying, said that in his practice he had seen many cases of what he believed to be Tuberculosis in horses, but only one case of Glanders. He thought also with reference to the milk question, that Tuberculosis was frequently found in the mammary gland.

On the motion of the PRESIDENT, seconded by Mr. STANLEY, a resolution was passed as follows: "That in the opinion of this Association, the time has arrived when Tuberculosis should be included in the Contagious Diseases (Animals) Act, and that the inspection of abattoirs and dairies, at present so imperfectly conducted in this country, should be improved, and transferred from police officers to qualified professional men."

A vote of thanks was accorded to Professor McFadyean for the loan of specimens of the tubercle bacilli exhibited at the meeting.

On the motion of Mr. W. S. CARLESS, seconded by the SECRETARY, a vote of thanks was accorded to Mr. Jones for his address; and on the motion of the SECRETARY, seconded by Mr. SMITH, a similar vote was accorded to Mr. Olver.

The usual vote of thanks to the PRESIDENT brought the meeting to a close. Subsequently, the members of the Association and visitors dined together, the PRESIDENT occupying the chair, and Mr. PARKER the vice-chair.

"The Health of the Visitors" was given by Mr. PARKER, and acknowledged by Professor WILLIAMS and Mr. WOLSTENHOLME.

The next meeting of the Association will be held in Birmingham in February, when Professor Penberthy will give an address.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held in the County Hotel, Newcastle-on-Tyne, on November 9th, 1888, Mr. D. Dudgeon presiding.

Present: Members, Messrs. J. Gofton, C. Stephenson, Wm. Temple, J. E. Peele, W. Grieve, Wm. Stevenson, G. Farrow, jun., W. A. Hancock, J. W. T.

Moor, Wm. Hunter, A. Chivas, G. Elphick, and G. R. Dudgeon; Visitors, Messrs. R. Brydon, M. Clark, J. McIntyre, Wm. Trotter, J. B. Cookson, E. Charlton, J. B. Lee.

Apologies for non-attendance were received from Professors Williams and McFadyean; Messrs. W. T. Briggs, W. J. Mulvey, J. E. Tudor, J. Malcolm, C. Sheather, T. Briggs (Bury), Wm. Hunting, C. Perkins, C. Winteringham, and W. B. Van Hansbergen.

The PRESIDENT suggested, as there were several breeders of stock present, they should at once proceed to the discussion of Mr. C. Stephenson's paper on "Hereditary Unsoundness," which was read at the previous meeting of the Association. He need not say the subject was one of world-wide importance generally, and to breeders of horses in particular. Although they all concurred in the fundamental principle that "like begets like," he believed that there were a great many difficulties in connection with the breeding of horses which even that did not bear out. He said he was glad to see present gentlemen who did not belong to the Association, but who, he understood, had much practical experience in horse-breeding, and they would be very glad indeed to hear their views on the matter and to have the results of their experience, which, after all, was often of a great deal more importance than the soundest theory.

Mr. STEPHENSON reopened the discussion by reading a few letters he had received from gentlemen to whom he had sent the report of their last meeting.

The PRESIDENT said the first disease mentioned in Mr. Stephenson's paper was Cataract, and suggested that they should take the opinion of the meeting as to whether it was hereditary or not.

Mr. R. BRYDON remarked that if a horse was born with a Cataract, he should believe it to be hereditary; but if Cataract was got as the result of accident, it was not.

The PRESIDENT here said it would be better not to confine themselves to one point, but to discuss the paper generally.

Mr. BRYDON said he listened to Mr. Stephenson's paper with very great interest at the last meeting, and since then he had had the opportunity of reading it, which he had done with equal interest. He thought it was a good paper when he listened to it, and after reading it he thought it was still better. He concurred with Mr. Stephenson in almost every particular. He thought Ringbones, Sidebones, Roaring, Navicular Disease, Spavins, shivering, bursal enlargement, odd feet, Greasy Legs, Mallenders and curby hocks were strictly hereditary under general circumstances. As he had just stated he did not think Cataract hereditary if caused by accident, but if it were developed early in life, without any appreciable cause, he would say it was hereditary. As far as his experience went, there were other things they had to avoid in breeding that were not strictly considered unsoundnesses. For instance, if they bred from a stallion with round bones, which no one could call an unsoundness, it was almost sure to be propagated in the produce. The same thing applied to upright pasterns, peculiarity in formation, action, or gait, and curby hocks. Those were things, perhaps, which no veterinary surgeon would consider himself justified in rejecting a horse for, because they were not technically considered unsoundnesses; but they were just as much, if not more, to be avoided, because they were most hereditary in his experience. They should always endeavour to have a stallion as symmetrical and fine-shaped as possible. He had known stallions, own brothers, out of the same mare and by the same sire, that were not at all alike in appearance, and the best-shaped horse always bred the best. It was very difficult to account for it, except that it was in the difference of shape. He thought if a horse developed Roaring from a very bad attack of Strangles, and was thoroughly sound before, he would not beget roarers, at least not necessarily so. In

fact, he had known cases to the contrary. He had also known old stallions which were grunTERS, and had never noticed any grunting in the majority of their produce.

Mr. C. CHARLTON said he would go even further than Mr. Brydon. He was satisfied from the results he had had that "like begets like." Several things had come to his knowledge. A gentleman two or three years ago told him he had a mare which foaled a foal without a foot, the mare having had her foot fast in a wire fence before she foaled. His brother had a ewe which had her foot nearly taken off, and she produced a lamb without a foot. He believed the mare he had referred to had her foot fast before she was put to the horse.

Mr. J. B. LEE said he had carefully read the valuable paper prepared by Mr. Stephenson, and, like Mr. Charlton, he concurred in it almost entirely. He had had some thirty years' experience in breeding horses, and had always found, if there was any peculiarity either in the sire or the mare, that peculiarity was almost certain to be developed, if not in the first generation, at any rate in future generations. He once put a valuable mare to a horse which was afterwards sold for a very large sum of money, but there was always a suspicion about the wind of this horse. He was passed as sound, but his produce was wrong in the wind. He had a case of malformation resulting from accident. It was a foal—a blood one—which was perfectly right in every way, and as strong as possible. It got its fore feet twisted in a gate; the feet were so much twisted that he did not think it worth while breaking the mare in. He put her to a horse, and she got a foal with twisted feet. He sold her at a small figure, and she turned out very valuable for going in a conveyance, and since then the purchaser had bred from her with the same result. He had noticed other peculiarities of a like nature, particularly where the horses had perhaps not curbs, but curby-looking hocks. If they put a mare to a horse—particularly in the blood line—with curby-looking hocks, they would be almost certain to get the same in the produce. He believed that almost every peculiarity was inheritable; even if it was the result of accident it was very often transmitted to posterity, although not always. There were certain things that were the result of accident, affecting particular parts, which he had not the slightest doubt would be transmitted. Before concluding, he should like to mention that he was the owner of a mare which was operated upon for Roaring. In that case they could not trace any roaring either to the dam or sire, but she developed the disease as the result of a severe cold. The mare was operated on by Professor Smith at Newcastle, but the result was not as satisfactory as he should have liked. There was no doubt she made a good deal less noise, but he believed she was not at all better for working purposes. In fact, on the contrary, he rather thought she laboured more in drawing a conveyance up a hill than she did before the operation, broke into a sweat on the least exertion, although not making as much noise as she used to do.

Mr. TROTTER said he had come to the meeting to learn all he could, rather than to make any remarks on the paper read by Mr. Stephenson. In the first place, he thought what the veterinary profession should do was this: they could scarcely now get unanimity in the profession as to whether an animal was unsound or not. That wanted to be settled, and then there would not be so much difficulty in arriving at the diseases which they had to guard against. He had kept stud-horses a good many years, and taken a good deal of notice as to the way they were bred. In regard to Laminitis, he did not think it was an hereditary disease. He had a horse badly foundered; in one season he covered 150 mares, and out of them there were 103 foals, and he had not heard of one of his foals having Laminitis. He had produced valuable stock. He could not think the disease was hereditary. He had had stallions with

Stringhalt, and he had seen their stock with Stringhalt, and the more fully developed it became the more hereditary it was. One stallion he had which pulled his hind legs too high up, and he happened to have a stallion by him which did the same thing; and the other day he saw a mare by this stallion, and she did the same. Here Stringhalt undoubtedly existed in three generations. He hoped the veterinary profession would agree as to which was a sound animal and which was not, and then they would not be so much in the dark.

Mr. ELPHICK said he had not the pleasure of being at the last meeting to hear Mr. Stephenson's paper read, but had looked it through, and thought they might all congratulate Mr. Stephenson on the ability with which the paper was drawn up. As regarded hereditary unsoundness, he thought there could hardly be two opinions about it. They all knew perfectly well that any defect in eyesight, such as Cataract, was hereditary; whistling, roaring, and grunting were hereditary, and all those bony depositions, such as sidebones, splints, and spavins, were also hereditary; and there were many other diseases, such as curby-hocks and action. He thought it was a question which should be looked to more than it was in breeding animals. They all knew that horses which threw their feet about were not so valuable when they came to be sold, and in many instances they were dangerous to ride. With regard to Laminitis, he thought that bad formation had a great deal to do with it, and if they saw horses with that development they should be perfectly justified in rejecting them. There could not be two opinions in regard to hereditary unsoundness, but the great thing was what Mr. Trotter had alluded to—unanimity of opinion as to when a horse was sound and when he was not. He maintained that in these questions it was only after a large amount of practical experience that a man was able to determine as to the soundness or unsoundness of an animal submitted to him, and by manipulation one man could detect a thing much more quickly than another. It could only be done by practice, and those were the men who should be appointed as examiners in the show-ring to give a decided opinion, and it should not be left to one individual; there ought to be two or more veterinary surgeons appointed to examine, and the opinion of the majority should be final. He thought, if something was done in the matter, there would not be so many disputes as there were at present. Mr. Charlton had spoken about a foal being born devoid of a foot, owing to some injury the mare had received during the time of pregnancy. It was very important that all breeding animals should be in a perfectly healthy state at the time of copulation, and be kept in as free and natural a state as possible at all times.

Mr. J. B. COOKSON said what had fallen from Mr. Elphick and Mr. Trotter, as to the difficulty of veterinary surgeons in being able to agree, he should like to make a few remarks. He had the privilege at Nottingham Show of seeing a great deal of what went on in the veterinary department, and he must say that as an amateur buyer of horses, and also having frequently had the honour of being a judge in the show ring, he never saw gentlemen take more trouble and be more careful than the gentlemen who had the onerous duty of examining the horses; and as he had frequently shown horses, he thought the least a man could do when he submitted his horse, and there were three gentlemen appointed to examine horses, was to take their verdict in a proper way. He believed that if they were able to follow carefully the history of those which were cast at Nottingham, they would find that many horses over which trouble occurred had been sold for insignificant sums by their owners, and he could only suppose himself that they were sold at a low price because they knew something themselves. There were certain horses which were passed by the veterinary examiners at other shows which were disqualified at the Royal show at Nottingham; but he thought he was

rightly informed that those gentlemen had instructions given them as to how they were to examine the horses, and he was one of those who held that that was wrong in all circumstances. If they submitted horses for examination before the veterinary surgeons, and desired them to pass their opinions upon them, stallions especially, they should give a full and particular account of their horses. They must not be cramped or confined by any opinion of the committee of a show. Their duty was to give full information and expression to it on paper, to those who were responsible for the show, and that verdict should be acted upon by the committee. He thought that the new order which the council of the Hunters' Improvement Society had issued, as to veterinary examinations of their hunters at future shows, was not only wrong, but more than wrong. He thought it was the duty of gentlemen in the veterinary profession to hold out against that, and say when they examined a horse that they were willing to do so to the best of their abilities, but not to be guided by the opinions of people who were amateurs. He felt very strongly upon that point. He had gone into breeding, and formed a small stud for breeding half-bred horses. He was on the look-out for a stallion, and he was told it was sound, but the difficulty was to pass that horse to his satisfaction, or to the satisfaction of a committee of the gentlemen who "bossed the show." He could not help thinking that the easiest way for hereditary unsoundness to be decided upon, was that unless, as some gentlemen remarked, a certificate from a veterinary surgeon was produced to say that he saw that animal when it was suffering, the nature of the accident which caused the defect, whatever it might be, that horse should be unsound as shown to them. He maintained that when they judged a horse, as a four-year-old, as a two-year-old, or as a yearling, except in particular classes, they should judge that animal as they saw him, and not as he was going to be. If it was to be a weight carrier, or simply a yearling, they should judge as the animal stood. Why should not the veterinary surgeons judge the stallion as they saw him, unless they had the most explicit corroboration of any testimony brought before them, and that should be from a veterinary surgeon who attended the horse suffering from the accident which caused the unsoundness. He thought people would go to the show if they had a competent tribunal to examine their horses. He still stuck to the point, that it should not be one individual, but a body of three gentlemen who should be called in for all practical worth. That he thought might easily do, and the public, he was sure, would be satisfied. He believed all the unpleasantness which arose at Nottingham as to the debarring of horses, had been the best thing that ever happened for those gentlemen who took an interest in breeding. They found they could not send horses to be thoroughly inspected and examined by the veterinary profession with impunity, and therefore they would all take care to buy sound horses. They would be pleased to know that they could buy a sound horse, and what they were looking for. What he thought it was in the hands of the profession to tell them was, in what way they were to have their horses examined.

Mr. GOFTON said that after the remarks they had heard that day, it seemed to him that they must pretty nearly come to the conclusion which Mr. Stephenson had arrived at in his paper, when he said that they should only breed from perfect animals. After all the cases enumerated of acquired unsoundness reproduced he did not see what other conclusion they could come to. If the other things that had been referred to could be transmitted, he did not see how Laminitis could be kept out. It was in the whole system before it was fully developed. It generally came from over-eating or over-feeding, and some horses were more liable to it than others; but he could not see that there had been a fair test as yet, because it often happened in

the sire or the mare they were bred from; but they wanted two or three crosses before they could tell whether it would assert itself or not. If it could not be transmitted he could not see how other things could be transmitted to horses, which they were taking upon themselves to argue were hereditary.

The PRESIDENT remarked that Laminitis was one of the most serious diseases they had to contend with; reasoning and arguing on the same line as in other diseases, he thought Laminitis ought to be transmitted, or at least that there would be a predisposition to disease. If a mare or a sire was affected with Laminitis, their stock, when the exciting cause of hard work came upon them, would be more liable to the disease than in the case of animals not so bred. The greater part of his life had been spent in town practice, and he had had very few opportunities of noticing these hereditary diseases. But he had noticed of late years that Laminitis had very much decreased. He did not see nearly the number of cases that they used to have. Horses were treated in a much more sensible manner than they were twenty years ago.

Mr. MOORE said that at the last meeting he made a remark that he would not like to say that Laminitis was hereditary. He had since been thinking the matter over, and he was still of the same opinion. He said that even supposing a mare or a stallion got Laminitis, he should not himself have any hesitation in breeding from such an animal. It was not as though Laminitis was produced by defect. How often did they come across Laminitis resulting from indigestion, or from animals over-feeding themselves! He failed to see, if they got a case of Laminitis resulting from indigestion, that it rendered a mare or sire useless for breeding purposes.

Mr. CHARLTON asked if Mr. Moore would follow out the same law when a mare or a stallion that had been trampled on or received injuries resulting in a club-foot, and the mare had cast one of that stamp.

Mr. MOORE said he knew that acquired defects were transmitted. If they had a mare with a club foot some of her progeny would have it.

Mr. CHARLTON: But when you get Laminitis you get very near a club foot.

Mr. MOORE: Not quite; not what I would call a club foot.

Mr. CHARLTON: Well, very near. Would it not be as likely to transmit the one as the other?

Mr. STEPHENSON thanked the breeders for their attendance, and for the very valuable information they had given. It was information that veterinary surgeons had few opportunities to obtain, and information that shed a great light upon the subject before them. As to the defects of their parents, they must remember that some diseases might lie dormant till, or after maturity; as examples he mentioned Phthisis and Insanity in the human family, and Tuberculosis in cattle. The taint was there, although they could not detect it, and it only wanted certain changes in circumstances to occur for its further development. It was not sound reasoning to say that because a one, two, or three years old was free from the known defects of its parents, therefore those defects were not hereditary. Young horses were sold and they lost all trace of them, and when with maturity and work certain diseases were developed, the connecting link was lost. The more he thought of this subject, the more he was inclined to believe that every peculiarity in the animals they bred them from—good, bad, and indifferent—might be reproduced in the offspring, and was hereditary.

The PRESIDENT said he thought from the discussion they had had, and the information given by the breeders, what passed at their last meeting, and what Mr. Stephenson had said, they might take it that the diseases enumerated in Mr. Stephenson's paper were hereditary. The only disease that there seemed

to be any dispute about was Laminitis, and he felt very much inclined to agree with Mr. Charlton, that if other defects were transmitted it was very possible that Laminitis might be also transmitted. In the first place, in Laminitis they had often a very material alteration in the construction of the feet, and that material alteration he should say was very liable to be transmitted. However, experience seemed to be against them. Just after their last meeting a gentleman met him, and told him a somewhat remarkable story, for the truth of which he vouched. A girl, about thirteen or fourteen years old, met with an accident to her eye, he forgot exactly the injury; but the eye was looked to, and by and by she got married and her daughters, when born, had no defect in their eyes, but when they came to the same age as that at which their mother had met with her accident, their eyes gradually changed and became like their mother's. Reasoning on the same principle, it was very seldom they saw any young animals suffering from Laminitis. It was generally seen in aged animals, and if they looked at it in that light, they might expect that the progeny would be apt to develop the disease when they became of the same age at which the parents were affected. He thought that they, as an Association, agreed with Mr. Stephenson, but with the saving clause as regards Laminitis; they looked upon all the other diseases as hereditary.

Mr. CHIVAS remarked, that he did not go in altogether that Laminitis was hereditary, but if he had a foal which was predisposed to it, he should say do not breed from it.

The suggestion of the President was agreed to.

Mr. GOFTON proposed a vote of thanks to Mr. Stephenson for his paper. The subject was exceedingly interesting, and the discussion would no doubt be profitable as well. He had enjoyed the two meetings very much, and believed he had learnt something from them.

Mr. CHIVAS seconded the motion.

The PRESIDENT said he was personally under great obligation to Mr. Stephenson for having, at his request, bestowed so much trouble and labour on the preparation of the paper.

The motion was carried with cordiality.

Mr. STEPHENSON briefly returned thanks. He assured them it had been quite a labour of love, after he had promised his good friend Mr. Dudgeon to undertake the work. He had read up the subject, and the more he studied it and hunted up different authors, the more he had got interested. He concluded by moving a vote of thanks to the breeders who had come there to give them the benefit of their experience; personally he had learnt a great deal indeed. It would be a right good job if veterinary surgeons and breeders could meet a good deal oftener.

Mr. ELPICK seconded the motion, observing that if breeders of animals who could trace their ancestors on both sides for generations, would take notes of cases of unsoundness, either hereditary or acquired, they would be able materially to guide veterinary surgeons to a proper conclusion. He also thought if they would avoid breeding from unsound animals there would be very little necessity for calling in veterinary surgeons, who would gradually disappear.

The motion was carried and suitably acknowledged by Mr. TROTTER.

Mr. Alfred Peele, of West Hartlepool, was nominated for membership.

The following office-bearers were then elected:—President, Mr. J. Gofton, North Shields; Vice-Presidents, Mr. H. Hunter and Mr. J. W. T. Moore, Newcastle-on-Tyne; Secretary, Mr. G. R. Dudgeon (re-elected), Sunderland; Auditors, Messrs. Moore and Hancock; Dinner Committee, Mr. Elphick, President, Vice-Presidents, and the Secretary.

The SECRETARY said he had received, on behalf of the Association, from

Mr. F. Billings, Nebraska, copies of his reports on Swine Plague and Texas Fever.

A vote of thanks to the President terminated the meeting.

G. R. DUDGEON, *Hon. Sec.*

LAHORE VETERINARY SCHOOL.

ON November 15th, the Viceroy of India, accompanied by the Lieutenant-Governor of the Punjab, visited this establishment. They were received at the entrance to the Pavilion by the Principal of the School, the Staff, and Members of the Board of Visitors. The Teachers of the School were introduced by the Principal, Mr. G. Kettlewell, as follows:—*Staff of the School.*—H. Pease, Esq., A.V.D., Veterinary Surgeon to Punjab Government; Dr. Rahim Khan, Khan Bahadur; Amir Shah, Assistant Surgeon; Mahtab Shah, Demonstrator of Anatomy; Gulam Hussain and Sirdar Shah, Hospital Assistants. The Principal conducted His Excellency the Viceroy and His Honour the Lieutenant-Governor to the table for the distribution of Diplomas, and gave a brief history of the School from 1882 to the present date. The Diplomas and Prizes to passed Students of last year were distributed. The new School Buildings were then inspected:—(1) Lecture Rooms and Museum; (2) Pavilion; (3) Horse Hospital for Paying Patients; (4) Horse Hospital Infirmary for Free Patients; (5) Dissecting House; (6) Canine Hospital. His Excellency the Viceroy and His Honour the Lieutenant-Governor then left by the eastern gate.

ADDRESS.

MAY IT PLEASE YOUR EXCELLENCY, YOUR HONOUR, AND GENTLEMEN,—The necessity for the Establishment of Veterinary Schools in India was brought prominently to notice a long time back by Mr. J. H. B. Hallen; and some years prior to the opening of this Institution in 1882 Mr. Hallen organised a Veterinary School on a minor scale at Hapur near Meerut.

The Hapur Army Reserve Depot Hospital was abolished about 1881, and the Veterinary students studying there at the time were transferred to this place, and Mr. Burke from that school was appointed Assistant Professor and Teacher of Anatomy here.

The Hapur students, both Civil and Military—forty-four in number—formed the nucleus of this school, and some fresh students entered here in the summer and winter sessions of 1882, making up a total for that year of 65. Out of this number 36 students from Hapur passed out the following year with diplomas of this school.

At present there is a considerable increase in the number of students attending, altogether 89—namely, 62 Civilians and 27 Military students.

In the spring of 1882 the premises we now occupy were purchased by order of Sir R. Egerton, at that time Lieutenant-Governor of the Punjab, and this formed the foundation of the Lahore Veterinary School.

With the exception of the School-house containing the Lecture room and Museum, there were no other buildings except a few servants' houses and small out-offices; and the compound was open all round with no shelter outside the verandah of the school, and no boundary wall, the place apparently being used as an open common.

In the meantime some sheds were built of wood-work and bamboo and reeds as temporary Horse and Cattle Hospitals; and the great wonder is that these buildings were not consumed by fire long before they had served their purposes, but they stood for years, and have only just been demolished.

In 1887 more land was secured, which afforded extensive room for new buildings, erected partly on the new land just secured, and in part on the old foundation. These include this Pavilion, a Cattle Hospital, large Horse Hos-

pital, Infirmary for Free Patients, Operating Theatre, Forge, Canine Hospital, Dissecting House, also a block of servants' houses.

Amongst the number the Pavilion we now occupy is the most prominent, and, I may say, one of the most essential of the buildings for educational purposes. While the Lecture-room is adapted for the theoretical teaching; this spacious structure is specially designed for the purposes of practical instruction.

Here clinical teaching and training in the mode of examination for soundness and the handling of animals is conducted.

The organs of sight and the organs of touch of the students are here brought into play with living subjects before them. Heretofore, all this part of the work had to be carried on in the open air and in the trying light and heat of the sun.

The Horse Hospital with its twelve loose boxes is, for all practical purposes, one of the best constructed buildings of the kind in India.

The Cattle Hospital, too, on a smaller scale, is a suitable building, and holds twelve patients, while the Infirmary for free patients contains twelve stalls. We have also given a plot of spare ground besides to the Horse Breeding Department, on which a stable has been built, in which the stallions, standing at Lahore, are located under the superintendence of the Deputy Commissioner of Lahore, and the change from the purlieu of the city to this elevated and open space has, in every way, benefited the horses.

There are a number of old buildings in course of demolishment, and, as the space is cleared, other buildings will, no doubt rise up in time. Amongst the number we hope to receive sanction for a suitable dwelling house for a resident House Surgeon and quarters for resident pupils.

With reference to the improvements which have been made, I have only to quote the words of the Director of Land Records and Agriculture, Mr. Steedman, in his last Report on the School, in which he said :—

“Considerable additions have been made to the school buildings during the year. The grounds have been levelled, unsightly hovels pulled down, and the hollows that were really cesspools filled up. It is hardly possible for any one who did not see the school site in its old condition to realise the enormous improvement that has been made. By this time next year it will, it is hoped, be possible to say that the school possesses its full complement of buildings.”

All these changes have been carried out in Sir J. B. Lyall's time, as Lieutenant-Governor of the Province, with great liberality on the part of the Punjab Government, and we are indebted to Mr. Hilton as the architect and designer, and General Perkins, for the results shown in the mass of new buildings and in alteration for the better all round.

The expenditure on buildings and acquisition and repairs up to the end of last official year amounts to Rs. 53,708.

The annual expenditure from Imperial Revenue, which includes salaries, teachers, and contingencies, amounts to Rs. 19,754 per annum, while the annual expenditure from Provincial Funds for pay of minor establishment is Rs. 9,070.

Annual Income from Fees and Hospitals is about—

1885-86	4,594-8-6
1886-87	2,776-9-6
1887-88	3,600-13-9

Total 10,971-15-9. Average last 3 years, Rs. 3,657-5-3 yearly, and the total amount from this source up to March 31st, 1888, amounts to Rs. 16,221-15-8.

With reference to the number of patients in the hospital and the practice of the school, there are at present only twenty altogether, but in the healthy time of the year we are rarely ever overcrowded.

The class of patients now under treatment come under the heading of surgical cases, such as lameness from various causes, wounds, and injuries.

Cattle are often brought to us in advanced stages of disease, and so are some amongst our equine patients belonging to the poorer class of natives; the animals often being heavily drugged before they are brought to us, so that we have not only disease in a pure and simple form, but often the opposite, dangerous cases to deal with.

Our operations have not been confined to Lahore. On the contrary, we have patients sent to us from various out-stations in the Punjab, and some even from the North-West Provinces, chiefly for surgical operations and treatment.

We are also occasionally consulted regarding the ailments of the inmates of the menagerie, and the students on some occasions have the opportunity of seeing monkeys, bears, and other animals and birds even treated. As far as success is concerned numbers of really severe and almost hopeless cases from time to time have been saved, and, notwithstanding the dangerous character of the maladies we have to contend with, the percentage of mortality in surgical and medical cases is only a fraction over 6 per cent, on admissions.

The graduates and passed candidates from this school are designated "Veterinary Assistants," in contradistinction to the older class of practitioners, without primary education and with no kind of qualification whatever.

Since the school first commenced operations in 1882 one hundred students have passed the Board of Examiners as veterinary assistants of the first and second class, and favourable reports have been received on the useful and practical work accomplished by a large number of these veterinary assistants, in campaigning operations, in military hospitals and stations in time of peace, and in civil districts as well, and there is a great demand at all times for the services of passed graduates of this school.

Some useful text-books for the use of students have been published since the school first commenced operations, amongst others, "A Text-book of Anatomy and a Hand-book of Surgery and Medicine," by Assistant Professor Burke. A work on "Materia Medica," by Dr. Rahim Khan, Khan Bahadur, and also a book on "Bovine Pathology," by Lala Agai Sain, translator to the school, from a course of lectures delivered in the school, and for which Lala Agai Sain was awarded an honorarium by the Punjab Government.

In conclusion I beg permission to introduce the successful candidates of this year to receive the Diplomas and Prizes:—

1. Mehtab Shah, Graduate, L. V. S. Diploma, from Board of Examiners, and appointed as Teacher of Anatomy to the Lahore Veterinary School, with First Prize.

The following are the passed candidates as Veterinary Assistants of the First and Second Class:—

1. Sundar Singh, First Class.—(1) 1st Prize in Veterinary Surgery and Medicine; (2) 1st Prize in Anatomy and Physiology; (3) One Prize for General Proficiency; (4) 1st Certificate on Hospital Practice.

2. Mohamed Yusaf Khan, First Class.—(1) First Prize, Bovine Pathology; (2) Certificate, Hospital Practice.

3. Asmatoola, Second Class.—(1) Certificate, Hospital Practice.

4. Karam Khan, Mountain Battery, Second Class.—(1) First Prize, Materia Medica; (2) Second Prize, Bovine Pathology.

5. Natha Singh, 19th Bengal Cavalry, Second Class.—(1) Second Prize, Veterinary Surgery and Medicine.

6. Wazir Mohamed, 19th Bengal Cavalry, Second Class.—(1) Certificate, Hospital Practice.

7. Bahadur Khan, 15th Bengal Cavalry.—(1) Certificate for handling Horses; (2) Certificate, Hospital Practice.

8. Jumla Shah, Transport Department, Second Class.

9. Ali Akbar Shah (Civil), Second Class.

10. Gholam Ashraf (Civil), Second Class.

The following candidates absent on Service and duty are entitled to Diplomas and Prizes, as follows :—

1. Sheikh Mohamed Ibrahim, 2nd Bengal Cavalry, Second Class.

2. Mian Singh, 1st Punjab Cavalry, Second Class.—(1) Second Prize in Anatomy and Physiology.

3. Ahmed Ali, Transport Department, Second Class.—(1) Second Prize in Materia Medica.

ROYAL AGRICULTURAL SOCIETY.

At the Monthly Council Meeting held on December 12th, Sir JOHN THOROLD (chairman) stated that Professor Brown had presented the following report :—

Pleuro-pneumonia.—In England, between the 29th September and the 1st December, sixty-nine fresh outbreaks of this disease were reported; 221 cattle were attacked, and 1,089 healthy cattle in contact were slaughtered. In Scotland, there were fifteen fresh outbreaks, fifty-two animals attacked, and 215 healthy cattle in contact slaughtered.

The total for Great Britain for the nine weeks were eighty-four outbreaks, 273 animals attacked, and 1,304 healthy cattle in contact slaughtered.

Anthrax.—There have been since the end of last quarter up to 1st December 30 outbreaks of Anthrax in Great Britain, 26 in England, and 4 in Scotland. The total number of animals attacked was 67, of which 48 were in England and 19 in Scotland.

Swine Fever.—There has been a marked decrease in the amount of this disease in Great Britain, since the end of last quarter. Up to the beginning of the present month 921 fresh outbreaks have been reported; 5,190 pigs have been attacked with the disease, of which 2,306 were killed, 2,064 died, and 480 recovered.

The investigations which have been made into the life history of the *lung worm* have already led to results which are very promising. It appears that the embryos of the worm do, as Dr. Cobbold suggested, inhabit earth-worms, but it has also been found that they undergo a certain amount of development in the lung tubes of sheep and calves, and it is at least probable that infected animals may directly infect others which are feeding in the same pastures.

A letter dated 30th November had been received from the Agricultural Department of the Privy Council, forwarding copy of an official report by Professor Brown on "Eruptive Diseases on the Teats and Udders of Cows in relation to Scarlet Fever in Man" (in which is included the results of the inquiry undertaken in accordance with the request of the Society made in June, 1887), and stating that, unless some special circumstances should render it necessary, it was not proposed to prosecute the inquiry further. The Committee recommended that the thanks of the Council be given to the Agricultural Department for undertaking this investigation.

Of the £500 granted to the Committee for 1888, they had expended £260 19s., and they moved for a renewal of the grant, of which they proposed that £200 be given to the Royal Veterinary College, subject to the same conditions as last year. The Committee had met nine times, and made nine reports.

Gazette, December 11th.

If retired under Article 406 <i>a</i> or 407	£800 0 0
--	----------

Given at Our Court, at Balmoral, this 20th day of October, 1888, in the 52nd year of Our Reign.

By Her Majesty's Command.

(S.) EDWARD STANHOPE.

The following appeared as an Army Order, dated November, 1888, No. 488 :—

Veterinary Surgeons of Volunteer Batteries of position will wear the uniform of the Army Veterinary Department, silver being substituted for gold in lace and ornaments.

Obituary.

The following deaths have been reported from various registrars and through the Post Office :—

Allen, Edward, Dublin	..	..	..	..	graduated 1878
Potts, Leonard, Wigton	..	..	..	..	„ 1859-79
Flower, Henry, Derby	..	..	..	..	„ 1857
Harrison, J., Warsop	..	..	..	..	„ 1857-79
Clayworth, J., late London	..	..	..	..	„ 1861
Evans, George, Somerset	..	..	..	..	„ 1851
Auckland, J., Inverness	..	..	..	..	„ 1840
Briggs, D., Cumberland	..	..	..	..	„ 1839
Berry, J. P., Northampton	..	..	..	..	„ 1864
Bell, R. T., Wokington	..	..	..	..	„ 1874-76
Cox, A. S., Salford, Lancashire	..	..	..	..	„ 1866
Garner, B., St. Ives, Huntingdon	..	..	..	..	„ 1845
Holt, H. L., Northallerton, Yorks	..	..	..	..	„ 1859
McFarland, A., Perthshire	..	..	..	..	„ 1843
Case, F., Godmanchester, Huntingdon	..	..	..	..	„ 1834
Moreton, R., Burton-on-Trent, Staffordshire	..	..	..	..	„ 1877
Reeve, Joseph, Bridgwater, Somerset	..	..	..	..	„ 1849
Packwood, W. A., Coventry	..	..	..	..	„ 1828
Stewart, Geo., Perth	..	..	..	..	„ 1861
Sharland, T. W., Devon	..	..	..	..	„ 1842
Symes, Chas., Wincanton	..	..	..	..	„ 1837
Semple, Wm., Dumbarton	..	..	..	..	„ 1875
Wallace, Wm., Glasgow	..	..	..	..	„ 1882
Young, John, Lanarkshire	..	..	..	..	„ 1872
Young, William, Deen, Peeblesshire	..	..	..	..	„ 1834

Notes and News.

THE COLLEGE OF STATE MEDICINE.—Professor Brown and Dr. Fleming have been appointed members of council of this College.

HORSES IN EARLY TIMES IN SCOTLAND.—In the 13th century we find that Roger Avenel, Lord of Eskdale, had a stud of horses in that valley. Patrick, Earl of Dunbar, in preparation for his departure to the Holy Land (A.D. 1247), sold to the monks of Melrose his stud of brood mares in Lauderdale, for the considerable sum of 100 merks sterling. Alexander III. had several establishments for rearing horses, to be used in hunting, doubtless, as well as in war.

HORSES IN THE TIME OF CHARLEMAGNE.—An ordinance or Capitular (*D Villis imperialibus*) of Charlemagne's, drawn up in A.D. 812, is illustrative

of the manners of his time. Among other things, it enacts that the *Judex* or Steward of each Villa was to provide stallions, that care was to be taken of the stud mares, and the colts were to be separated at the proper season; the stables to be thoroughly prepared. There were to be good artificers, particularly blacksmiths; and at Christmas, in giving an account of their administrations, among other items, mention was to be made of what was derived from blacksmiths, and from colts and fillies. "Our cars for war to be litters well made, covered with hides so closely sewn, that if necessity occurs for swimming rivers, they may pass through (after being lightened of their contents) without water entering."

AN EXPENSIVE RACE-HORSE.—It is reported that the Duke of Westminster has sold Ormonde to Mr. John Morris, of New York, for £17,000. Ormonde will shortly be removed from Eaton Hall stud stables to Newmarket, where he will remain till June, after which he will go to the States.

FOREIGN EXPORTS OF HORSES.—Germany imported in the last year 73,519 horses and exported 11,428; in 1886 there were imported 72,748 and exported 14,000. The import of France in 1887 was only 10,000, the export 34,518 horses (amongst them 3,820 stallions and 8,865 mares), at a value of 31,000,000 francs.

CONTAGIOUS PLEURO-PNEUMONIA IN THE UNITED STATES.—A meeting of the American National Cattle Growers' Association was held at Chicago during the stock show. Dr. D. E. Salmon, superintendent of the Bureau of Animal Industry, gave a few figures, showing the number of herds of cattle which had been inspected in the search for Pleuro-pneumonia during the year. There had been examined 274,255 head of cattle, and this inspection did not consist in looking over the fence at the animals, but was a careful examination of each individual animal, on the look-out for those infected with Pleuro-pneumonia. Of those examined 2,330 were found infected, and slaughtered. Also 4,778 head of cattle which had been exposed to the disease were killed. The doctor then divided the figures given, showing how many were found in each State. In the majority of States the disease had been entirely eradicated, and the rest, although not entirely free, were almost so.

HORSE BREEDING.—The Second Report of the Royal Commission on Horse Breeding has been issued. It reports the result of the show held at Nottingham last February, and states that at that show a considerable proportion of the stallions exhibited were disqualified on the ground of hereditary unsoundness, and this fact alone justified the policy adopted by the Commissioners. They express the opinion that no change in the distribution of the grant is necessary, and that it will be advisable in the ensuing year to follow on the same lines, and again offer premiums for thorough-bred stallions suitable for getting "half-bred horses" of general utility. It is proposed that these Queen's premiums shall be offered at a show in conjunction with that of the Royal Agricultural Society, the Hunters' Improvement Society, and the Hackney Horse Society, to be held in London in February. The report is signed by the Duke of Portland, the Earl of Coventry, Lord Ribblesdale, Mr. Chaplin, Major-General Ravenhill, Mr. Jacob Wilson, Mr. John Gilmour, and Mr. Bowen-Jones.

A PHENOMENAL MASS OF SUET.—A Scotch newspaper had the following announcement some time ago:—"A Perth butcher has for the last few days been exhibiting in his shop window a lump of fat of phenomenal size, taken from the carcass of a bullock. The fat weighed exactly one hundredweight, along with the kidneys, when taken from the carcass. The animal was a cross-bred bullock, fed by Mr. Tod, Gorthie Mains. During the last week several hundreds of persons have visited the shop, some of them eminent butchers from England, and all aver that never in the whole of their experience have they seen anything similar."

Correspondence.

TESTIMONIAL TO MR. CARLISLE.

DEAR SIR,—At a meeting of the Border Counties Veterinary Medical Society, held in the Bush Hotel, Carlisle, on the 26th October, 1888, Professor Williams said:—

“He believed he was correct in stating that their old friend, Mr. Joseph Carlisle, of Carlisle, was about the first, and he certainly was the oldest qualified veterinary surgeon in the county. Although verging on four score years, his hale, hearty, and stalwart form was to be envied; then the enthusiasm and love he had for the profession were unqualified, and he (Professor Williams) would like to see Mr. Carlisle’s portrait hanging in the Council Chamber of the Royal College of Veterinary Surgeons, London, alongside that of his old friend, Mr. Thomas Greaves (loud cheers). He had great pleasure in proposing that Mr. Carlisle’s portrait be painted in oil, or that an enlarged carbon photograph be procured, and that a Committee be appointed to carry out the object.”

Mr. Thomas Greaves, Manchester, seconded the motion, which was unanimously adopted by the members present.

Should the above proposition meet with your approval, and you would like to give the object your support, a contribution will be thankfully received (until the 21st December) by

Mr. John Bell, V.S., Carlisle, President of the Society.

Mr. Henry Thompson, V.S., Aspatria, Treasurer of the Society, or

Mr. John Armstrong, V.S., Penrith, Secretary of the Society.

P.S.—Mr. Carlisle’s photograph has been taken by Messrs. B. Scott & Son, Carlisle, and several private gentlemen have already subscribed to the fund.

Penrith, *Nov. 21st.*

JOHN ARMSTRONG, *Hon. Sec.*

BORROWED MATTER.

DEAR SIR,—At a meeting of the Lincolnshire Veterinary Medical Association, I read a paper on “Colic in Horses.”

I find in “Bell’s Messenger” a verbatim copy of my paper, which must have been taken from one of the journals. Will you kindly inform me whether there is a remedy for such a proceeding? as personally I have a strong objection to details of treatment appearing in the public press.

Huntingdon, *Dec. 13th.*

JAMES SMITH.

[There is no remedy for reprinting articles in this way.—ED. *V. J.*]

QUACKERY.

SIR,—I agree with your correspondents in condemning the conduct of members of our profession who, for some inscrutable cause, bolster up quack horse and cattle medicines by appending their names to testimonials as to their virtues. A pretty compliment it is, forsooth, to their own therapeutic or pharmaceutical lore, when they have to use medicines the composition of which is unknown, and compounded by persons ignorant, no doubt, of the nature of the drugs which they mix and of the diseases which their nostrums are intended to cure.

I have no hesitation in saying that these quack medicines are responsible for the deaths of many valuable animals, besides being a source of constant annoyance and very serious loss to country practitioners. I speak feelingly, because my own practice has been harmed, and I have many bickerings with my clients about the use of these never-known-to-fails.

It is sufficiently hard, in all conscience, for some of us to make a decent living, and there is plenty of opposition of one sort or another without members of our own profession, some of them you will observe in snug places where they have no fear for the morrow, seeking by their ill-advised action to hinder us.

"NEFAS."

PROFESSIONAL PROGRESS.

SIR,—At the meeting of the N.V.A. held in this city, we were told by the very learned gentleman who presided that our profession "during the last few years had made considerable progress both in theory and practice." Some of us accept this *cum grano salis*.

We have constant and recurring proof that the theory of the schools and their outline of practice is ineffective in turning out thoroughly capable men. If the present system is as successful as is claimed for it, how is it that so many of the recent graduates anxiously advertise for situations where they can see practice, irregardless of remuneration?

Without being hypercritical, it occurs to many of us that the teachers themselves are not practitioners in the strict acceptation of the term; this being so, it is a case of the blind leading the blind. No one denies that many are past masters in sophistry, in the definition of plausible routine, whereby disease may be measured and treated by rule of thumb. An amusing instance illustrates how absurd notions sometimes run counter to both professional and common sense. It was in the earlier days of the use of the thermometer as a veterinary adjunct. In advocating its use, a *confrere* stated that if any one sent him the correct reading he could not only define whether the subject was ailing, but could diagnose the disease. This especially held good with respect to C. Pleuro-pneumonia. It rather astonished some of us, who knew that with the advantages of a personal examination he was guilty of frequent *faux pas*.

The rule of thumb teaching of the schools is of all methods the most empirical, and why they should wish to make it more so is difficult to understand, unless it is to render the profession independent of diagnostic skill. Doubtless it will suit the kid-glove, be-ringed fraternity. It might also suit owners of animals who possessed a fair share of experience, as they could tell these gentlemen the *nature* of the malady, and they could then prescribe per the book.

A great deal was said about social and professional distinction. These are as distinct and separate as possible. By far the greater number of the social successes in our ranks have attained that grade without any professional brilliancy or ability, and by the aid of fortuitous circumstances. Some are born with the proverbial silver spoon in their mouth, or are pitchforked willy-nilly into a lucrative business, where, without professional merit, they soon become pompously important. The same run of luck may have given them their advent into our ranks. Depend upon it, the success of a good few depends on their consummate impudence, the cut of their clothes, or the style of their turn-out; brains and ability have the least to do with it.

It is an inexplicable paradox that a manufacturer should object to the introduction of his *own* ware into the market, and yet this is the position the worthy gentleman falls into when in a lugubrious manner he bewails the overstocking of our market. We ask him, Who overstocks it? and with what ware? It is not competition we of an older school object to: the keener it is the better; it puts a man on his mettle, and with "a free course and no favour" we say, let the best man win. Query, Will it be the recent additions? Had something been said of the spirit of hostility, the false and

insinuating method, the unfairness displayed by many of currish spirit, "who, willing to wound, are yet afraid to strike," some, had they sense of shame, might have profited thereby; but no, nothing was said of this; we were rather told of duties we owe the profession. We think good doctrine, like charity, should be well sampled and practised at home, and this we recommend to public posturists whose "evil manners live in brass and brass their face." It is not always the "new" men or the poor men who are guilty of "cutting." It is notorious that there are large firms, especially large as far as parade goes, and who by such means have climbed into fictitious importance, that snap at everything, taking a greatly reduced pay, meeting this by employing a pupil, who after the first month or two is dubbed assistant, or else a graduate who, having gone straight to college from an office, or from a grocer or an ironmonger's shop, has scarce *nerve* enough to attempt to practise for himself, although he has a diploma, but would rather learn experience at the expense of his employer's clients. Whether this is honourable or honest we leave you to judge.

Speaking especially of "new" men, so far as we know them, they are acquit of "cutting," for if not otherwise professionally accomplished, most of them are *au fait* in bill-making. It is very desirable that such graduates as are not practical should become so; but that they should learn their business at the expense of owners of animals is an imposition and a fraud, and that a practical training is best given prior to a collegiate course cannot be doubted. We all assume too much on our graduation, and with ideas of this kind a few months' practice is often considered sufficient. A case in point: A graduate who had no previous training, after receiving his diploma, spent five or six months in a practice where one cob was kept, but it was amply sufficient to make, in his own estimation, the "only cattle practitioner" in the district where he settled, although there were several with a longer period of very extensive practice than he numbered years in age, and of very much higher scholastic attainments. Naturally, this brilliantly able young gentleman made a series of blunders, but by great personal canvass and constant sounding of his own trumpet he makes headway. The Professor took it upon himself to criticise professional writers to public papers; his observations are ambiguous and invidious, the last in its application to *some* of us, whilst others write nothing but what finds favour in the eyes of the learned critic. Perchance the latter are a certain clique, or they clothe their language in that ambiguity so delightful to his worthy soul. Despite a disclaimer from the profession, we take up the question on personal grounds, and the language was so pointed that on all hands we were told of it. In the disclaimer we are candidly told that the learned gentleman had never read anything of ours; this being so, we think his observations were in bad taste, unless he can show that harm has been done either to the profession or to stock-owners, and this we defy him to do. Unlike the Professor, we are not *facile princeps* with the pen, nor do we occupy the chair at a college, nor have we the voice facility of Picaloquax, but we have many years' experience in active employ in full and varied practice; and with all due deference to his great talents, we should neither fear to go before or after him in a professional capacity. Further than this, and what is more to the point, our efforts have been to elevate the profession by showing that we were as anxious to prevent disease as to treat it, and where we have advised treatment, as we have done in some cases, it has been to prevent the indiscriminate and foolish use of the agents supplied in medicine chests that some firms flood the country with. More, we have always advised in all difficult cases promptitude in seeking veterinary aid. So much for the learned gentleman's tempest in a teapot, which, perhaps, would not have been raised, save by instigation. There are other things connected with the

meeting that are worthy of notice, but time and space allow only of a cursory one. We should like to ask, Is the operation for Roaring a success? We do not mean has it made an improvement only? but will it pay the owner to have it done? From what we hear, it will not. The discussion on diseases of the feet was lamentably lacking, and we would that some who took part in the meeting would turn to the *Veterinary Record* and the Transactions of the Veterinary Medical Association; but there were giants in those days. We note that one said he would bleed and give a full dose of physic. What about Metastasis? What did the mutual hand-shaking of the Society and the S.P.C.A. do for the promotion of the objects of the latter? We trow nothing. Had they told us something about Concussive Fever (hot feet) and how to prevent and relieve it, the poor, suffering animal, if not the Society, would have been grateful.

Newcastle-on-Tyne, Dec. 13th, 1888.

W. Cox, M.R.C.V.S.Lond.

HAPPY THOUGHTS.

SIR,—I beg leave to propound the following: 1. It is desirable, when a meeting of the members of an association is announced for 2.30 p.m. precisely that it should take place at that hour, and not at 3.15.

2. It is sometimes desirable that the convivialities connected with the meeting should take place after the meeting.

3. It is undesirable that a number of members who do not wish to join the festive board should be kept waiting while the president and his cronies are discussing mine host's wine and their own yarns.

4. It is undesirable to call the president "your worship" at the meeting, either intentionally or otherwise.

SACK.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from Messrs. Arnold and Sons, London; T. Bowditch, California; F. J. Short, A.V.D., Aldershot; T. Greaves, Manchester; H. W. Steel, A.V.D., Netley; R. W. Burke, A.V.D., Jubblepore, India; "Sack"; F. Raymond, A.V.D., Woolwich; G. Wartnaby, Burton-on-Trent; J. A. Meredith, A.V.D., Mhow; Messrs. Burroughs, Welcome and Co., London; T. Hopkin, Manchester; W. F. Greenhalgh, Leeds; J. Smith, Huntingdon; A. H. Thomas, Preston; H. Kidd, Hungerford; S. Villar, Harrow; A. M.† Crighton, Lisburn, Ireland; W. R. Davis, Isle of Man; "Nefas"; G. R. Dudgeon, Sunderland; W. Cox, Newcastle-on-Tyne; J. Malcolm, Birmingham; Professor McCall, Glasgow; A. W. Hill, London,

BOOKS AND PAMPHLETS: *A. Liantard*, Lameness of Horses and Diseases of the Locomotory Apparatus; *Dr. D. J. Ferran*, Revindication de la Priorité de la Découverte des Vaccins du Choléra Asiatique; *A. M. Davies, M.D.*, The Food of the Soldier; *W. S. Adams, A.V.D.*, Professional Notes on a Voyage to Australia and on a Voyage from Melbourne to Madras in a Horse-ship; *C. G. Buchanan Klophef, M.D.*, Tuberculosis; Transactions of the Pathological Society; Bulletin et Mémoires de la Société Centrale de Médecine Vétérinaire.

JOURNALS, ETC.: *Journal of the Agricultural Society of Victoria*; *Echo Vétérinaire*; *Thierärzst*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Lancet*; *British Medical Journal*; *Hufschmied*; *Journal de Médecine Vétérinaire*; *Clinica Veterinaria*; *Recueil de Médecine Vétérinaire*; *Annales de Médecine Vétérinaire*; *Edinburgh Medical Journal*; *Repertorium der Thierheilkunde*; *Revue Vétérinaire*; *Medical Press and Circular*.

NEWSPAPERS: *The Carlisle Journal*; *Lahore Civil and Military Gazette*; *Sydney Daily Telegraph* (2 copies); *Eastern Counties Gazette*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

FEBRUARY, 1889.

THE CHEMICAL COMPOSITION OF THE SWEAT OF THE HORSE.

BY FRED SMITH, F.I.C., PROFESSOR, ARMY VETERINARY SCHOOL,
ALDERSHOT.

IN the investigations into the physiological chemistry of the horse's body, which are being carried out in this school, I have been led to examine the secretion from the skin, for the reason that ample material has recently presented itself, during a course of experiments on the chemical composition of the expired air during work. The horses from which the material for analysis was collected were being worked at known velocities, in order that I might determine the oxygen absorbed and the carbonic acid given off from the lungs. The animals were in perfect health, but were getting their winter coats, and although in fair working condition, yet they sweated very freely.

The sweat was collected from the skin by means of a spatula, selecting only those parts where it came away as a clean fluid; it was then filtered. It will thus be seen that what I have to describe is really the mixed secretion from the skin of the horse. I do not know of any practicable means of obtaining the secretion of the sweat glands by itself.

The mixed secretion, which for the purpose of description will be known in this paper as sweat, is always turbid, viscid, yellowish white in colour, and in reaction strongly alkaline; I have never found any exception to this reaction, but I think I have observed that the more distressed the horse becomes the less alkaline is the fluid. It is stated that the sweat of man is alkaline. I have *always* found it acid. The alkalinity of horse's sweat is partly volatile, and

partly fixed ; that is to say, much of the alkalinity may be got rid of by boiling the fluid. I am of opinion that the volatile alkalinity is due to carbonate of ammonia ; the fixed alkalinity is probably due to potash, but on this point I am not certain. In 100 parts of sweat the volatile alkalinity was equivalent to ·18144 grammes of caustic potash, whilst the fixed alkalinity was equivalent to ·09856 grammes.

In weighing out sweat for analysis, I was struck by the remarkable manner with which it lost weight. I have in an earlier paper mentioned the same fact in connection with horn ; in sweat it is even more marked. It is only with the greatest difficulty and rapid weighing that its weight can be ascertained ; *every second it is getting lighter*, owing to evaporation. I think this shows us how well the fluid is composed for the purpose of evaporation from the skin.

I have often wondered what the white foam we see on sweating horses is due to ; we notice it particularly where any friction has occurred from saddlery, harness, or even from parts rubbing together, as between the thighs. We never see it, or at least I have never heard of it, in man, and I believe it is peculiar to the horse. My idea is that it is a kind of soap, formed between the alkaline sweat and the fatty material from the sebaceous glands. When this froth is dried, it leaves a fine sandy-looking residue.

I have found in every specimen of sweat examined *a considerable quantity of albumen* ; this albumen exists in two forms—the smallest proportion is serum albumen, the largest alkali albumen. I was more than astonished when I came across this remarkable fact, and I think we may see in it the keynote to that matter of every-day observation, the loss in condition resulting from sweating. No loss in condition would result were simply water and salts to be poured out on the surface of the skin, for these could be immediately replaced ; the something which does pull horses down in condition is the albumen poured out through their skin, which is in the proportion of about three and a half per cent. of the fluid excreted ; this represents something very considerable. Can we deny the value of clipping horses, with this fact before us ?

In boiling one specimen of sweat with HNO_3 , an odour of butter came from the boiling liquid.

I have examined one specimen of sweat in which I found *no* serum albumen, though there was much alkali albumen. All the other specimens have yielded both serum and alkali albumen in the proportion of, roughly, one of the former to eight of the latter.

The fat in the fluid examined was small, under one-half per cent.

The salts found in sweat are chloride of sodium in large quantities, traces of lime, a well-marked quantity of magnesia, traces of phosphoric acid, potash in varying quantities, and a very considerable quantity of sulphates and ammonia. The whole making up about three and a half per cent. of salts.

The chloride of sodium is so large, that it readily crystallises when the sweat is allowed to evaporate spontaneously ; it may then be seen in large cubical masses. In a specimen of sweat diluted with water, which had been standing over four months, I found a large number of crystals resembling oxalate of lime . In another specimen of sweat, I found that the filter paper used in filtering it became, in the course of a few days, covered with long shining needles like benzoic acid, and when the sweat itself was evaporated to dryness and allowed to stand, it also became covered with these most beautiful crystals, which I regard as chloride of sodium ; at any rate, they gave a marked silver reaction, and rendered the filter paper very damp. When sweat is dried and left for some time in a damp place, it smells like mice. When the diluted fluid is left standing some weeks, it has an unpleasant musty odour. Another specimen had an odour of horses. I could find no urea in sweat.

COMPOSITION OF THE SWEAT OF THE HORSE.

Water	...	92·6178.	
Organic matter		3·8710	<div> Serum albumen ... ·3302 Alkali „ ... 3·0508 Fat ·4900 </div>
Salts	...	3·5112	<div> Chlorides, very large. Lime, small. Magnesia, large. Sulphates, very large. Potash, large ? Ammonia, large. Phosphates, traces. </div>
		—————	
		100·0000.	

A pint of sweat will contain ·676 oz. of albumen ; assuming oats to contain on an average 12 per cent. albuminoids, the albumen in one pint of sweat would be represented by 5·633 oz. of corn, but as only 87 per cent. of the albuminoids in oats are capable of being digested and converted into tissue, we must really give $5\frac{3}{4}$ oz. of oats to equal the albumen found in one pint of sweat.

I do not know how much sweat a horse with a long coat loses at laborious work, but I think we might state, as a practical way of dealing with the subject, that clipping must be equivalent to at least an extra pound of corn per diem.

ANATOMICAL AND PHYSIOLOGICAL OBSERVATIONS
ON HORSES IN INDIA.BY JOHN HENRY STEEL, F.R.C.V.S., PRINCIPAL, BOMBAY VETERINARY
COLLEGE.

THE following observations made on *post-mortem* examination of twelve horses of the 1st Madras Light Cavalry, cast and destroyed in August, 1884, may be found of some interest.

The horses ranged in age from six years ten months to nineteen years five months, the average being about thirteen years six months; thus they were all matured animals; nine were geldings, and three mares; six were Persians, three Northerns, two Capes, and one Australian. They averaged a little over fourteen hands two inches. Four were greys, one black, the rest browns and bays. All were crippled more or less, but some of the older ones were destroyed to prevent their falling into bad hands, after long and good service. The Capes and Northern horses were notable as having done good service, but the oldest horse of all was a Persian.

The following were the Weights of some of the Body Organs in pounds avoirdupois :—

ORGANS.	MAXM.	MINM.	AVERAGE.	REMARKS.
Lungs (right)	7	4	5	One case of long-standing pleuritic adhesions.
„ (left)	5	4	$4\frac{1}{2}$	
Heart	6	5	$5\frac{1}{2}$	Bots present in each case, thread-worms in six, worm cysts in two.
Stomach	3	2	$2\frac{3}{4}$	
Stomach Contents . .	8	2	$3\frac{7}{8}$	
Liver	11	8	$8\frac{1}{2}$	In one case a few lymph deposits and old scars on a small spleen.
Kidney (right)	1	1	1	
„ (left)	1	1	1	
Spleen	4	2	$2\frac{7}{8}$	

The following are approximate estimates of Lengths of Intestines in feet :—

BOWEL.	MAXM.	MINM.	AVERAGE.	REMARKS.
Small	72	20	$67\frac{1}{2}$	
Large cæcum	$5\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$	
Double colon	$18\frac{3}{4}$	$14\frac{1}{4}$	$17\frac{1}{4}$	
Single colon	18	$12\frac{3}{4}$	$14\frac{1}{4}$	
Rectum	1	$1\frac{1}{2}$	$1\frac{1}{2}$	
Total large	42	33	39	
Total bowels	111	99	$105\frac{1}{3}$	

The following were found to be the Conditions of the Organs and their Contents at various Periods after Feeding:—

SINCE LAST FED.	STOMACH CONTENTS.	SMALL INTESTINES CONTENTS.	LARGE INTESTINE CONTENTS.		
			CÆCUM.	DOUBLE COLON.	SINGLE COLON.
I. 4 hrs., day-time.	Much coolthie in pyloric part.	Slime in first third, liquid in middle, and solid matter in last third.	Full of pulpy food, some coolthie and gravel.	Dry; at first much coolthie.	Dry.
II. 5 " "	Much coolthie.	A small amount in middle third.	Contents very liquid	Pulpy matter; coolthie in part 2.	Much, dry.
III. 7 " "	No coolthie; a small amount of fresh grass; villous coat purple.	A little juice here and there.	A fair amount of rather watery matter; much coolthie.	Full of moist matter.	Full and moist.
IV. 12 " night.	Coolthie, yellow in colour; some grass present.	Sand in several parts; a fair amount of food in ileum.	Whole large bowel full of rather watery matter.		
V. 12 " "	A very little moist food.	A small amount of juice in first third; slime at middle of duodenum.	Very watery.	Full; a little sand.	Dry.
VI. 12½ " "	A small amount of coolthie.	Small amount in ileum.	Full, watery.	Full, watery.	Full, moist.
VII. 13 " "	A moderate amount of food.	Slime at intervals, and occasionally mixed with a little coolthie; in ileum much watery fluid and some grain.	Watery.	Watery, gravel in 1st and 2nd parts.	Full.
VIII. 13 " "	Watery; a little coolthie and grass.	Much slime about the middle; some bowel juice in ileum.	Food passing from small into large bowel; much watery matter, and all large bowels full.		
IX. 13½ " "	Fairly full; a little coolthie.	Slime and juice at intervals in ileum; some food near ileo-cæcal valve.	Rather watery.	Much grain. All large bowel full.	
X. 14 " "	Liquid contents; a small amount of yellowish coolthie.	Slime in first third, slime and mucus in middle, and a little coolthie in posterior third.	Fair amount, not very watery.	Rather watery.	Full.
XI. 15 " night and day	A little coolthie and grass.	Much slime and juice in middle third; slime in posterior third.	Dryish.	[part. Much sand in fourth	
XII. 20 " "	Only gastric juice, about a quart.	A little watery fluid in first third; a small amount of juice in the duodenum.	Much watery fluid, a little sand, and a little food.	All large bowel full. Fairly full.	Dry.

Thus it seems, *as regards gastric digestion*—(1) That it progresses more rapidly during daytime than at night, or rather in early morning than in the evening. In the former case no grass given after, in the latter the usual ration. (2) An ordinary feed of coolthie takes about six hours (morning) to digest. (3) About fourteen hours is the time before the stomach becomes empty after the evening feed and grass.

As regards digestion in the small intestine—A (1) It is here remarkable that in no case was food found in duodenum. This is probably an effect of peristaltis. The “slime” found was probably chymous material, the “watery fluid” probably unmixed intestinal or gastric juice. (2) The rare detection of food in the small bowel leads to suspicion that its passage through there is rapid, and pellet by pellet, as in case of the œsophagus, except that the pellet becomes impregnated thoroughly with intestinal secretion, and some delay occurs near the ileo-cæcal valve. (3) The supply of intestinal juice in jejunum seems almost constant.

As regards digestion in the large bowel—B (1) In a large proportion of cases the cæcal contents were watery, tending to support the commonly accepted view that the cæcum is a receptacle for water. *It is not recorded when the horses were watered last.* (2) The cæcum always seems to contain something, liquid or solid. At any rate, cæcal digestion is going on for fourteen, fifteen, or even twenty hours after ingestion of food. (3) The relations between fulness of stomach and cæcum are not definite.

C. *Colon, double*: (1) Seven hours to thirteen hours after feeding seems the time of maximum occurrence of solid matter in the colon. (2) The watery state of cæcal and colal contents are contemporaneous.

D. *Single*: (1) About the time when gastric digestion is going on in ordinary routine the rectal contents are dry. (2) When the cæcum and double colon are full of moist contents, so too is the single colon, as a rule. (3) From twelve to fifteen hours after feeding we may expect to find the single colon full.

Liver Abnormalities.—In no case was the liver free from disease, the following conditions being present: calcareous spots in six (only a few in three of these); lymph deposits in eleven, generally on the anterior surface, varying from “slight” to “much,” or “lymph threads;” softness, one; cysts, one; atrophy, three.

The parasites present in these horses have been elsewhere noted, *i.e.*, in a paper contributed to the Journal of the Bombay Natural History Society. A small amount of chalky deposit on the lining membrane of the bowel was noted in one case.

Sand was present in the small bowel in one case, in the cæcum in two cases, in the double colon in three. These observations are crude, but original, and may prove suggestive, and lead to more exact conclusions after future observations, also to correction of the conclusions here drawn. The records were all made in the rough-and-ready way of a practical observer, rather than on the careful and exact methods of the worker in the laboratory.

THE VALUE OF INOCULATION IN PLEURO-PNEUMONIA, AS DISCLOSED BY *POST-MORTEM* EXAMINATION OF THE VICTIMS.

BY JAMES MC CALL, F.R.C.V.S., PRINCIPAL OF THE GLASGOW VETERINARY COLLEGE.

(Continued from p. 10.)

In my evidence I say, "On 3rd March I found four cows showing symptoms of Pleuro." These are the animals entered under dates 4th and 7th, removed and slaughtered; and I now ask Mr. Rutherford if, when informed by the owner on the 3rd of March that I had resolved on slaughtering all four animals next morning, he did not the same evening write me a note requesting that three of them might be left, and only one killed, as "they could not harm their neighbours, and that the outbreak was practically at an end."

Influenced by his request, I removed only two on the 4th, and the other two I felt compelled to remove on the 7th. Then as to the last animal removed, in my evidence I stated, "On the 21st March a brown cow purchased at Wishaw exhibited symptoms of Pleuro-pneumonia. This is one of the three cows purchased at Wishaw for preventive inoculation, but as no compensation would be given, I allowed her to wait till 4th April. I would not have allowed her to live so long, except for the inoculation, in case it should be said I was in too great a hurry."

Further comment I do not feel inclined to make, although the occasion is tempting, and I now leave the verdict (as to my remissness in the removal of the animals to slaughter) with every confidence in the hands of my professional brethren.

History, etc., of the Second Outbreak of Pleuro-pneumonia in Mr. Salmond's Stock.

In consequence of information supplied to me by the police, I visited Mr. Salmon's cow-sheds on 16th June, 1888, and in course

of my inspection of the stock I detected a cow (No. 1) exhibiting symptoms of Pleuro-pneumonia. In the absence of Mr. Salmond, Jun., I arranged with Mrs. Salmond that the animal would be removed to the slaughter-house the following morning. The float-cart was accordingly sent, but Mr. Salmond objected to the animal's removal, giving as his reason that the cow was "getting better." I mention these circumstances to show that Mr. Salmond has a mind and will of his own, and is not the guileless and ingenuous "son" Mr. Rutherford would incline us to believe. I may further mention that the cow was not given up until I had written an official letter, and until (as I was informed) Mr. Rutherford had also examined the animal.

Before proceeding further it is necessary that I should explain (1) that the history of each animal, as recorded, was voluntarily supplied to me by Mr. Salmond, Jun., and that he alone is responsible for the accuracy or otherwise of the same; (2) that the statement in each case as to temperature, pulse, etc., is given on the authority of one of my assistants, Mr. Matthew Graham, M.R.C.V.S.; (3) that the statements regarding the *post-mortem* appearances emanate from the pen of my colleague Professor Limont; and (lastly) that I superintended the removal of all the animals, the inspection of the carcasses as to their fitness or otherwise for human food, fixed the compensation to be paid the owner, through him invited Mr. Rutherford to come to Glasgow to inspect the organs, detained the diseased lungs for days, and in short, personally discharged all the duties appertaining to my office as Inspector to the Local Authority of Glasgow.

No. 1 Cow.—History.—Bought 7th March, 1888, in Glasgow, and said to have come from Limerick. Inoculated by Professor McQueen on 7th April, and who at same time inoculated other seven cows. Appeared in health till a fortnight prior to removal to slaughter-house on 20th June.

Post-mortem.—Left lung extensively hepatised and grown to chest.

Diagnosis.—Pleuro-pneumonia of recent origin.

No. 2 Cow.—Large brown cow, examined 21st June. Breathing disturbed. Temp., 105°. Pulse, 65. Respirations, 25. Coughing, and not feeding well.

History.—Purchased 1st May, 1888, at Paisley Auction Mart. Fed and milked well till four days ago. Not inoculated. Slaughtered 22nd June, 1888.

Post-mortem.—Whole lung examined, lying on the table with the inferior (convex) aspect of the trachea uppermost. In this position the aspect of the lung visible to the observer is called in the report "superior," the aspect on the table "inferior."

Report.—Second lobe from apex of right side is solid on its “superior” aspect, and there is thickening of the pleura towards the margin. On its “inferior” aspect there is similar thickening of the pleura over most of the surface, which is torn and rough, owing to the separation of pleuritic adhesions. These thickenings are hard and firm. On palpation, the solid portion is found to be a mass about the size of a very large clenched fist, of almost cartilaginous hardness. The hardness comes nearly to the “superior” surface (where there is thickening of the pleura), and quite to the “inferior” surface (where there is thickening of the pleura and separate pleuritic adhesions). On dividing the mass by a single incision, and then by another at right angles, it is found to be separated from the healthy lung tissue by a septum of solid connective tissue about half an inch thick. This septum is absent on the “inferior” aspect, because here the solid mass reaches the separated pleuritic adhesions. The lobules of the mass are separated by an excessive amount of connective tissue, exactly like that of the septum between the mass and the healthy tissue. The lobules themselves are solid, but friable, red when fresh cut, but rapidly becoming much darker when exposed to the air. The smaller bronchi in it may, perhaps, have somewhat thickened walls.

Diagnosis.—Encysted Pleuro-pneumonic lung-softening and breaking down not yet begun, is at last not visible to the naked eye. Encystment as thoroughly established as I have ever seen it.

No. 3 Cow.—History.—Purchased December, 1887, at Paisley. Fed and milked well till middle of March, 1888. As she was unwell from a suspected stomach affection at the time Mr. McQueen inoculated the eight cows, we did not inoculate this one. Slaughtered 22nd June.

Post-mortem.—Whole lung examined in same position as No. 2. Apical lobe of left lung encysted. The cyst-wall is formed, firstly, by a thickening of the pleura to the extent of one-half to three-quarters of an inch; secondly, by a septum of connective tissue, quite half an inch thick, between it and the healthy lung tissue. Both thickened pleura and septum are very hard and firm, so that the healthy lung can easily be dissected off the latter. On incising the “superior” aspect of the pleura, a yellow diffuent material welled out, and was found to form a layer from one-half to an inch in thickness. On sweeping the finger round in this layer under the pleura, it was found to be traversed by bands fixed to the deep surface of the pleura. Most, but not all, of these gave way readily. Some were ascertained to be small

hollow tubes. Below this yellow diffluent layer the lung was found to be solid, but very friable, pinkish in some places, but yellow elsewhere. At points it was yellow and approaching the consistence of porridge, but held together by the bronchi and overgrown connective tissue between the lobes. It contained what were apparently irregular cavities, but these were probably made in the cutting and handling of the lung. On incising the pleura on the "inferior" aspect, the yellow diffluent layer was found to be absent, the solid mass here reaching to the pleura. It had the same appearance as that above.

The solid central mass was now shelled out except where the large vessels and bronchi entered it, and a long, flexible probe passed from the trachea was found (upon dissecting down) to lie in a bronchus in the centre of the mass.

The deep surface of the septum between the mass and the healthy lung has on it bright red patches about the size of a shilling, apparently the result of hæmorrhage into it. In the central mass itself there were veins containing soft and recent clots. At the posterior extremity of the left lung there was a mass about the size of a gooseberry. It was apparently composed of tubercles.

Diagnosis.—Encysted pleuro-pneumonic lung encystment through softening and breaking down, proceeding from periphery towards centre, and complete as regards the yellow diffluent layer under the pleura. Communication between trachea and centre of the mass by open bronchi. Communication between vessels in centre of mass and pulmonary system.

No. 4 Cow.—History.—Purchased 17th April, 1888, at Paisley. Fed and milked well all through, and was never inoculated. Temp., $103\frac{3}{5}^{\circ}$. Removed for slaughter 22nd June.

Post-mortem.—Whole lung examined in the same way. In posterior part of right lung, about the middle of its margin, but not extending quite to it, was a large mass about the size of a goose's egg. On section its "superior" aspect was found to be separated from the pleura by a little healthy lung tissue; but on its "inferior" aspect it extended to the pleura, which was here somewhat rough and thickened. There was overgrowth of the connective tissue separating its lobules. The lobules themselves were solid and red.

Diagnosis.—Pleura-pneumonic consolidation. In middle of left lung of same cow was an indurated lobule with bright red points. In the centre of one of the bronchial glands there was a stinking abscess.

No. 5 Cow.—History.—Purchased 17th April, 1888, at Paisley.

Fed and milked well. Never suspected anything wrong. Was not inoculated. Removed for slaughter 22nd June.

Post-mortem.—Whole lung examined in same way. Mass similar in every way to that in No. 4, except that it was not so sharply defined, had its lines of “overgrown” connective tissue between the lobules harder and narrower, its lobules not so red, and that there was not so much thickening of the pleura on its inferior aspect. On the “inferior” aspect of the same lobe, but two inches more in front, was a solid mass about the size of a small pullet’s egg. In this one the lines of overgrown connective tissue are not so thick.

Diagnosis.—Two masses of pleura-pneumonic consolidation.

No. 6 Cow. — History. — Bought August, 1887, at Paisley. Inoculated 9th of September, 1887, by Mr. Rutherford. Always fed and milked well. Temp., $101\frac{1}{2}^{\circ}$. Pulse, 44. Respirations, 16. Slaughtered 23rd June.

Post-mortem.—Sound lungs. Good carcase.

No. 7 Cow. — History.—Bought at Wishaw October, 1886. Inoculated 9th February, 1887, by Mr. Rutherford, when Pleuro was raging in the byre. Never refused food, and always milked well. Temperature night before slaughter, $102\frac{1}{2}^{\circ}$. Pulse, 42. Respirations, 17. Slaughtered 23rd June, 1888.

Post-mortem.—Large hard mass in posterior part of right lung. Cross-section revealed a plum-pudding-like mass, about 4 inches by 5, of the colour of red granite. It was solid throughout, but friable. One half shelled out almost by its own weight, and showed a yellow, porridgy surface. The other half shelled out in the same way, except where large bronchi entered it. A probe was passed along one of these large bronchi into a bronchus in the substance of the solid mass. Each half of mass extended to the pleura over about half its surface, and the pleura in contact with it was thickened to the extent of a quarter of an inch or more. Elsewhere each half was to some extent separated by a connective tissue septum from the next layer, but at places there was complete continuity. This next layer was about an inch and a half thick. It consisted of solid, yellow, very friable lung tissue, which at places was nearly porridgy, but held together by the bronchi, etc. Outside this layer the relations varied. At some places there was thickened pleura; at others, lung mainly made up of very tough overgrown connective tissue; at others, solid lung, simply showing less degeneration than the layer itself; at others, lung apparently nearly healthy.

Diagnosis. — Encystment (partial and irregular) of pleuro-pneumonic lung of old standing. Softening and degeneration at the periphery. Communication between bronchi in centre of mass, and larger bronchi passing from it!!!

No. 8 Cow.—History.—Purchased August, 1887, at Paisley. Inoculated by Mr. Rutherford 9th September, one month after purchase. Considered healthy always, and is now thick fat. Temp., $101\frac{1}{2}^{\circ}$. Pulse, 47. Respirations, 14. Slaughtered 23rd June, 1888.

Post-mortem.—Both lungs diseased. Small bit of left lung showed a mass the size of a hen's egg. On section it showed typical "marbling" and "lymph." There was thickening of the pleura over it. Larger bit of the left lung very hard at places. Section showed the connective tissue between the lobules increased, and the lobules of a light greenish yellow colour.

Diagnosis.—Recent pleuro-pneumonic consolidation.

No. 9 Cow.—History.—Bought August, 1887, at Paisley. Inoculated by Mr. Rutherford, in September following. Thick fat; always fed and milked well. Temp., $101\frac{1}{5}^{\circ}$. Pulse, 50. Respirations, 16. Slaughtered 23rd June, 1888.

Post-mortem.—Numerous cysts, varying in size from that of a pea to that of a small hen's egg, with porridgy and cretaceous contents, subpleural and deep.

Diagnosis.—Tubercle.

No. 10 Cow.—History.—Bought December, 1887, at Paisley. Fed and milked well. Inoculated by Mr. Rutherford. Temp., $101\frac{3}{5}^{\circ}$. Pulse, 45. Respirations, 17. Slaughtered 25th June.

Post-mortem.—Whole lung. A considerable number of cysts, about the size of small marbles, in both lungs. Contents porridgy and cretaceous.

Diagnosis.—Tubercle.

No. 11 Cow.—History.—Purchased January, 1888, at Paisley. Always fed and milked well. Inoculated by Mr. Rutherford. Temp., $101\frac{3}{5}^{\circ}$. Pulse, 45. Respirations, 17. Slaughtered 25th June, 1888.

Post-mortem.—Whole lung. Many cysts about the size of a marble in both lungs. Contents porridgy and cretaceous. Many have a number of small solid white nodules just outside their capsules.

Diagnosis.—Tubercle and secondary tubercle. Posterior tip of left lung of same cow has pleura and lung substance somewhat injected.

No. 12 Cow.—History.—Purchased August, 1887, at Paisley. Always fed and milked well. Inoculated by Mr. Rutherford in September. Slaughtered 25th June, 1888.

Post-mortem.—Bit of lung. Numerous very small nodules, which have in their centres single, distinct, irregular, coral-like concretions. Excess of mucus in bronchi.

Diagnosis.—Peculiar tubercles. Tip of the bit shows some injection of the pleura.

No. 13 Cow.—History.—Bought December, 1888, at Paisley. Inoculated by Mr. Rutherford. Milked well. Slaughtered 25th June, 1888.

Post-mortem.—Two bits of lung. One bit shows cysts with porridgy and cretaceous contents, and pleura somewhat injected.

Diagnosis.—Tubercle. The other bit shows lobules, though of a pale greenish-yellow colour, and exuding much fine froth on pressure.

No. 14 Cow.—History.—Bought at Wishaw August, 1886. Inoculated February, 1887, by Mr. Rutherford, when pleuro was raging in the byre !!! Always fed and milked well, but temperature rose to 106° , and continued so for eight days, at time of inoculation. Slaughtered 26th June. Temperature night before slaughter, $101\frac{1}{5}^{\circ}$. Pulse, 46. Respirations, 14.

Post-mortem.—Left lung grown to six ribs. One large bit of lung shows in its interior the wall of a cyst which has been incised and is now empty. The wall is distinct, but not very thick. There is a stinking mass of yellow diffuent material in cyst, about the size of a pigeon's egg, which forms a diverticulum of the main cyst. There are some thrombosed blood-vessels upon the deep wall of the main cyst.

Diagnosis.—Encystment of Pleuro-pneumonic lung of old standing.

No. 15 Cow.—History.—Bought at Paisley February, 1888. Inoculated in March by Professor McQueen. Fed and milked well up to 22nd June, 1888. Slaughtered 26th June. Temperature night before slaughter, $101\frac{1}{2}^{\circ}$. Pulse, 57. Respirations, 16.

Post-mortem.—Left lung grown to the sixth, seventh, and eighth ribs. One bit of lung: close together are two masses of solid lung, each about the size of a large walnut. They are of a muddy coffee colour, mixed with yellow, and are very friable. One is full of cavities, which are probably the result of handling.

Diagnosis.—Pleuro-pneumonic consolidation and degeneration.

No. 16 Cow.—History.—Purchased August, 1887, at Paisley. Inoculated by Mr. Rutherford September following. Always fed and milked well. Temp., $101\frac{1}{2}^{\circ}$. Pulse, 45. Respirations, 17. Slaughtered 26th June.

Post-mortem.—Both lungs diseased. One bit larger than a bullock's heart. Pleura, pretty well all over, shows lymph and granulations from recent Pleurisy. The lung contains an immense number of cysts, most of them about the size of a walnut. In parts these cysts touch each other, and here the lung is nothing

more than a mass of them. Each has a distinct wall of connective tissue. The contents of many are bright yellow and completely diffuent, exactly like the yellow diffuent layer in No. 3. Some, however, have a more solid centre, this centre being really cheesy when pressed between the fingers. There is no cretification whatever. When the diffuent and cheesy contents are carefully removed it is found that the cysts are more or less traversed by bronchi, into which a probe can be passed. They even form a kind of skeleton for the contents of some cysts. One smaller bit : exactly the same, but cysts fewer in number.

Diagnosis.—Numerous small Pleuro-pneumonic encystments ; softening and degeneration (from periphery to centre) complete in many, nearly complete in the others.

No. 17 Cow.—History.—Purchased at Paisley February, 1887. Inoculated by Mr. Rutherford eight days after purchase, and when Pleuro-pneumonia was in the byre. This is one of the experimental animals allowed to be purchased at the time for preventive inoculation. Temperature night before slaughter, $101\frac{1}{5}^{\circ}$. Pulse, 44. Respirations, 16. Always fed and milked well. Slaughtered 26th June.

Post-mortem.—Pleuro-pneumonic consolidation. Both lungs extensively hepatised, and deposits of tubercles.

No. 18 Cow.—History.—A Canadian cow, purchased November, 1887. On arrival in Glasgow, inoculated February, 1888, by Professor McQueen. Always fed and milked well. Slaughtered 27th June, 1888. Temperature night before slaughter, $101\frac{1}{5}^{\circ}$. Pulse, 45. Respirations, 15.

Post-mortem.—Upper division of right lung grown to tenth, eleventh, and twelfth ribs. One large bit of lung : pleura on both sides is thicker than usual. The lung contains a hard mass about the size of an orange. On cross-section of this mass, a somewhat smaller solid mass was shelled out of its interior. It almost fell out by its own weight. Its surface was yellow and porridgy. On section its substance proved to be pinkish yellow, solid but friable. The wall containing it was of connective tissue, and about one-eighth of an inch thick, but covered internally by branching tubes. At one point outside the cyst the lung was tough, pale greenish-yellow, and frothy, as in No. 8.

Diagnosis.—Encystment of Pleuro-pneumonic lung. Softening and degeneration begun.

No. 19 Cow.—History.—Purchased in Glasgow Market December, 1886. Inoculated by Mr. Rutherford February, 1887, when Pleuro-pneumonia was raging in byre. Slaughtered 27th June. Temp., $101\frac{3}{5}^{\circ}$. Pulse, 44. Respirations, 15.

Post-mortem:—A few cretaceous cysts. Other porridgy and

cretaceous cysts, varying in size from that of a horse-bean to that of a small walnut.

Diagnosis.—Tubercle. Part of lung is tough, pale greenish yellow, and frothy. Pleura is somewhat thicker than usual.

No. 20 Cow.—History.—Purchased at Rutherglen September, 1886. Inoculated February, 1887, by Mr. Rutherford, when Pleuro was raging in byre. Always fed and milked well. Slaughtered 27th June.

Post-mortem.—Tuberculosis, same as No. 19.

No. 21 Cow.—History.—Purchased December, 1887, at Paisley. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 27th June. Temp., $101\frac{1}{2}^{\circ}$. Pulse, 45. Respirations, 15.

Post-mortem.—Sound lungs and good carcass.

No. 22.—History.—Purchased at Paisley February, 1888. Inoculated same month, by Professor McQueen. Always fed and milked well. Slaughtered 28th June. Temp., $101\frac{1}{2}^{\circ}$. Pulse, 44. Respirations, 14.

Post-mortem.—Sound lungs and good carcass.

No. 23 Cow.—History.—Purchased August, 1887, at Paisley. Inoculated November, 1887, by Mr. Rutherford. Always fed and milked well. Slaughtered 28th June. Temp., $101\frac{1}{2}^{\circ}$. Pulse, 44. Respirations, 14.

Post-mortem.—Sound lungs and good carcass.

No. 24 Cow.—History.—Purchased December, 1887, at Paisley. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 28th June. Temp., $101\frac{1}{5}^{\circ}$. Pulse, 45. Respirations, 14.

Post-mortem.—Sound lungs and good carcass.

No. 25 Cow.—History.—Purchased at Paisley September, 1887. Inoculated by Mr. Rutherford. Always fed and milked well. Slaughtered 28th June. Temp., $101\frac{3}{5}^{\circ}$. Pulse, 46. Respirations, 16.

Post-mortem.—Sound lungs and good carcass.

No. 26 Cow.—History.—Purchased at Paisley December, 1887. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs and good carcass.

No. 27 Cow.—History.—Purchased at Paisley December, 1887. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs. Fair carcass.

No. 28 Cow.—History.—Purchased at Paisley December, 1887. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs. Fair carcase.

No. 29 Cow.—History.—Purchased at Paisley September, 1887. Inoculated October, 1887, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs.

No. 30 Cow.—History.—Purchased at Paisley February, 1888. Inoculated by Professor McQueen, April 7th, 1888. Fed and milked well. Temp., 101° . Slaughtered 2nd July.

Post-mortem.—Left lung grown to sixth, seventh, and eighth ribs. Posterior lobe of both lungs voluminous and œdematous. Posterior lobe of right lung badly affected with tubercles of various sizes, all having liquid and cretaceous or (oftener) porridgy and cretaceous contents. Two large ones on the “inferior” aspect had thickening of the pleura over them. One of these had liquid contents, bronchi traversing it, and secondary tubercles around it. On the superior aspect of the same lobe was a rather deeply seated hard mass. On cross-section it was found to be a solid, but friable spherical mass, about the size of a Tangerine orange, enclosed in a rather thin capsule. It was pinkish yellow in colour. One half was shelled out almost by its own weight. It was yellow and porridgy on the surface. The other half, along with its capsule, was cut out and preserved. The large bronchus supplying this portion of lung was slit open. It showed several translucent nodules upon its lining, especially where smaller branches were given off. In the trachea itself there were some tubercular ulcers.

Diagnosis.—Pleuro-pneumonic consolidation and tubercle.

No. 31 Cow.—History.—Purchased March, 1888, at Paisley. Inoculated by Professor McQueen, April 7th, 1888. Slaughtered 2nd July.

Post-mortem.—Sound lungs. Sound carcase.

No. 32 Cow.—History.—Purchased at Paisley August, 1887. Inoculated September 9th following, by Mr. Rutherford. Slaughtered 2nd July, 1888.

Post-mortem.—Sound.

No. 33 Cow.—History.—Purchased at Paisley November, 1887. Inoculated by Mr. Rutherford December 31st, 1887. Temperature increased, and the animal evidently unwell for eight days in February, 1888. Temp., 1st July, $101\frac{1}{2}^{\circ}$. Pulse, 44. Respirations, 17. Slaughtered 2nd July, 1888.

Post-mortem.—Left lung grown to chest extensively. All parts of both lungs show tubercles, and especially collections of tubercles with porridgy and cretaceous contents. There is a large mass on the “superior” aspect of the posterior lobe of left lung. There is a still larger mass, the size of a large lemon, on the “inferior” aspect of the same. Over the larger masses the pleura is thickened.

In the last-mentioned mass the connective tissue is greatly overgrown and very hard. It cannot be very distinctly separated from the walls of the tubercular cysts which have replaced the lobules. When the contents of these cysts are turned out the connective tissue and bronchi are left as a complete skeleton, which formerly supported the porridgy and cretaceous material replacing the lobules. The bronchi in this mass were plugged by yellow catarrhal material. In connection with it there was a subordinate mass, the size of a small hen's egg. This consisted of numerous yellow lobules, about the size of a small Indian pea. They gave each lobule the appearance of a bunch of currants.

Diagnosis.—Pleuro-pneumonic consolidation and tubercle.

No. 34 Cow.—History.—Purchased at Paisley March, 1888. Inoculated 7th April, 1888, by Professor McQueen. Slaughtered 4th July.

Post-mortem.—Much the same as No. 33.

Diagnosis.—Pleuro-pneumonic consolidation and tubercle.

No. 35 Cow.—History.—Purchased September, 1887, at Paisley. Inoculated same month, by Mr. Rutherford. Slaughtered 4th July, 1888.

Post-mortem.—The lung, especially the large posterior lobes, is voluminous and very œdematous. At the posterior tip of the right lung there is slight evidence of recent pleurisy in the shape of "lymph." There are a few small collections of pearly tubercles on the "inferior" aspect of the posterior lobe of the left lung.

Diagnosis.—Tubercle.

No. 36 Cow.—History.—Purchased at Paisley November, 1887. Inoculated December 31st, 1887, by Mr. Rutherford.

Post-mortem.—Much similar to No. 35.

Diagnosis.—Tubercles.

No. 37 Cow.—History.—Purchased at Paisley March, 1888. Inoculated 7th April, by Professor McQueen. Slaughtered 4th July, 1888.

Post-mortem.—Sound lungs. Fair carcase.

Such, then, is the history and *post-mortem* of the second outbreak of Pleuro-pneumonia in Salmond's stock, and I contend that there is in it material to prove "that Mr. Rutherford's inoculation of the stock in February, 1887 (the date of the first outbreak), did not arrest the spread of the disease at that time, but that it actually carried it on, and was the cause of a second outbreak in June, 1888."

In order to save time and trouble, I now append a table showing the date of purchase of each animal, the date of inoculation and slaughter, and the *post-mortem* :—

	Purchased.	Inoculated.	Slaughtered.	Post-mortem.
1	7th March, 1888	7th April, 1888	20th June, 1888	Pleuro-pneumonia (recent).
2	1st " "	Not inoculated.	22nd " "	Encysted Pleuro-pneumonia.
3	December, 1887	" "	" "	" "
4	17th April, 1888	" "	" "	Pleuro-pneumonia consolidation
5	" " "	" " "	" " "	" "
6	August, 1887	9th Sept., 1887	23rd " "	Sound lungs.
7	October, 1886	9th Feb., "	" " "	Encysted Pleuro-pneumonia.
8	August, 1887	9th Sept., "	" " "	Recent Pleuro-pneumonia con- solidation.
9	" " "	" " "	" " "	Tuberculosis.
10	December, "	Inoculated ...	25th " "	"
11	January, 1888	" ...	" " "	"
12	August, 1887	" ...	" " "	"
13	December, "	" ...	" " "	"
14	August, 1886	February, 1887	26th " "	Encysted Pleuro-pneumonia (old).
15	February, 1888	Inoculated ...	" " "	Pleuro-pneumonia consolidation
16	August, 1887	September, 1887	" " "	Pleuro pneumonia encystments.
17	February, "	February " "	" " "	Pleuro-pneumonia consolidation
18	November, "	" 1888	27th " "	Encysted Pleuro-pneumonia.
19	December, 1886	" 1887	" " "	Tuberculosis.
20	September, "	" " "	" " "	"
21	December, 1887	December, "	" " "	Sound lungs.
22	February, 1888	February, 1888	28th " "	"
23	August, 1887	November, 1887	" " "	"
24	December, "	December " "	" " "	"
25	September, "	Inoculated ...	" " "	"
26	December, "	December, 1887	29th " "	"
27	" " "	" " "	" " "	"
28	" " "	" " "	" " "	"
29	September, "	October, "	" " "	"
30	February, 1888	7th April, 1888	2nd July "	Pleuro-pneumonia consolidation and tubercle.
31	March, "	" " "	" " "	Sound lungs.
32	August, 1887	9th Sept., 1887	" " "	" "
33	November, "	31st Dec., "	" " "	Pleuro-pneumonia consolidation and tubercle.
34	March, 1888	7th April, 1888	4th " "	Pleuro-pneumonia consolidation and tubercle.
35	September, 1887	September, 1887	" " "	Tuberculosis.
36	November, "	31st Dec., "	" " "	"
37	March, 1888	7th April, 1888	" " "	Sound lungs.

A brief analysis of the above may be rendered as follows :—

Cows inoculated, and found on <i>post-mortem</i> affected with Pleuro-pneumonia	11
Cows not inoculated, and found on <i>post-mortem</i> affected with Pleuro-pneumonia	4
Cows inoculated, and found on <i>post-mortem</i> affected with Tuberculosis	9
Ditto, sound	13

To prove that the inoculation practised by Mr. Rutherford on the animals implicated in the first outbreak did not arrest the

spread of the malady, I again direct attention to the facts connected therewith, as given in detail, and more particularly to the circumstances connected with cow No. 9, inoculated 16th, 24th, and 29th February, 1887. This cow, it must be remembered, was purchased, along with other three, at Wishaw, for the express purpose of showing the value of inoculation, and how it would protect them from the disease Pleuro-pneumonia, which, as Mr. Salmond has frequently said, was at the time raging in his byres. It was in no manner benefited by the operation, but on the contrary, at the average period of inoculation it presented all the symptoms of an animal affected with the malady and which had contracted the disease by the natural method, namely, infection.

Coming down to the last outbreak, I shall now single out a few cases for analysis.

Case No. 7, we are informed, was purchased in October, 1886; inoculated 9th February, 1887, "when Pleuro was raging in the byre," and slaughtered 23rd June, 1888, so that this animal belonged to both outbreaks. She was not killed during the first outbreak, because she exhibited no well-marked symptoms of being affected with Pleuro; but nevertheless she was, and I contend the *post-mortem* proves conclusively that this animal alone was sufficient to keep up the infection in the byre, and to transmit the disease to every animal entering the cow-shed; for does not the *post-mortem* make it clear that the diseased portions of her lungs communicated with one of the large bronchi, and that a whale-bone probe could be passed from it into the centre of the encapsulated mass?

In a lecture which I delivered to the members of the West of Scotland Veterinary Medical Association in January, 1886, on the disease in question, I stated, "If during the course of the malady, when contracted by the natural method, *i.e.*, inhalation of the virus, a portion of lung tissue becomes encapsuled (there is a proneness to this), although that animal to all appearance has made a complete recovery, and has been allowed to mix with sound animals for weeks and months with apparent impunity to those around it, still, whenever the time comes that the air penetrates the capsule, and the tissues liquefy, the imprisoned microbes will escape in the breath; and thus that animal, although recovered from the disease, and not now labouring under the specific disease, still has become anew a source of infection. Unfortunately, the same holds equally good with the inoculated animal if it should have contracted the seeds of the disease by the natural method prior to, or at the time of, its inoculation; and as inoculation is scarcely ever practised until the disease

has declared itself present on a member of the herd by the natural method, and consequently must have been present there for some weeks, the chances are that several animals are affected in every herd before inoculation has been had recourse to. Therein lies the danger, and no doubt is the reason that inoculated animals have been so frequently known to propagate Pleuro among sound animals."

Case No. 8 may be dismissed with the remark that if the inoculation was successful when practised on 9th September, 1887, it failed in protecting the animal eight months, as there can be no doubt that this animal had laboured under an attack of Pleuro-pneumonia for a period of not less than six weeks prior to its being slaughtered.

Case No. 14 is interesting in this respect, that it is the counterpart of case No. 7, and again establishes the direct connection betwixt the first and second outbreaks.

Case No. 16, like No. 7, has an open and direct communication from the encapsulated mass to the bronchi, and this animal, although inoculated, "and always fed and milked well," had the power to infect sound cattle, and was another and additional source of infection.

Case No. 17 again proves a close connection betwixt the first and second outbreaks, for it "is one of the experimental animals allowed to be purchased at the time (of the first outbreak) for preventive inoculation."

Case No. 18 is interesting, and clearly demonstrates where the cow got the infection. She was a Canadian cow, purchased on arrival in Glasgow, but not inoculated until she had been about three months in the byre.

Case No. 30 is the counterpart of No. 16.

Case No. 33 is a complicated case of Pleuro-pneumonia and Tuberculosis, and in no way benefited by inoculation.

Case No. 34 is much the same as No. 33.

With no desire to annoy Mr. Rutherford, but to arrive at the truth, I again ask him to reconcile these cases with the following statements, also contained in his evidence:—

"Is inoculation always effectual?"—"Yes; 'inoculation will undoubtedly always arrest and stamp out Pleuro-pneumonia.'"
"Vaccination does not always take with an infant; why should inoculation always take with an animal?"—"It is the case that it does. One thing you may depend upon is this, that if they will not take inoculation they will not contract the disease; it is impossible for an animal to resist inoculation, and subsequently to contract the disease." "In *post-mortem* examination I have never been able to meet any inoculated animals with the disease."

In the belief that I have proven (what I undertook to do), that inoculation did not arrest the spread of the disease in Salmond's stock at the time of the first outbreak, and that it was the keeping of inoculated but affected animals alive, in the belief that they were sound animals, and rendered so by inoculation, that worked out the second outbreak. I will now conclude by a quotation from the lecture I delivered, and to which I previously referred: "No doubt, if great care be exercised in selecting the subjects for inoculation, and if none but non-infected animals be inoculated, the contagium cannot be spread by them; but he is a bold man who would declare that, after he had exercised all his skill, he could not be mistaken, and that he had not inoculated any animal that had contracted the disease by the natural method. The man is not born who can discriminate with accuracy in this matter, and I repeat therein lies the, I might almost say, sole objection to the practice of inoculation for the eradication of Pleuro-pneumonia, and it is an objection which will never be got over, because it is but a limited extent of the chest of the cow which is open to percussion and auscultation."

A CASE OF ANTHRAX, AND A CASE OF—WHAT?

BY A. E. MACGILLIVRAY, BANFF, N.B.

ABOUT a fortnight ago I was called express one night, about six o'clock, to attend a horse which was extremely ill, at a farm some six miles out. I lost no time in being on the spot, but fully half an hour before my arrival the horse had expired.

I learned that the horse had been at work in the plough all the afternoon, and was unyoked when it began to get dark.

On arriving at home he commenced to go round and round, to lie down and get up, to breathe heavily, and was withal so very much distressed that I was sent for immediately. I saw him half an hour after death, and found him immensely distended with gas, rectum partially protruding, and blood oozing from same. On observing these symptoms, and considering the suddenness of the attack, and immediate fatality, I at once expressed the opinion that Anthracoid Apoplexy, located in the abdomen, was the cause of death.

Next morning I made a *post-mortem* examination, and found my previous night's *post-mortem* diagnosis correct. The usual well-known signs of Abdominal Anthrax I need not give in detail; suffice it to mention—what makes me chronicle the case—that the spleen had reached the enormous weight of twenty-three pounds! I suppose I am safe in saying that there never was such a spleen discovered *post-mortem* in any horse, the normal weight of the horse's

spleen being, according to Dr. Fleming's "Anatomy," thirty-two ounces, but here we had 368 ounces! So much for Splenic Apoplexy in the horse.

The other case to which I intend referring was equally unique. Some three weeks ago I was asked to go up to the public slaughter-house to examine the carcase of a three-year-old ox which had been killed the day before, up to which time he had been thoroughly healthy; in fact, he had never been ailing all his life. I found the carcase in prime fat condition, but all the inside walls of thorax and part of the abdomen were quite black, not merely dark-looking, but thoroughly black; in like condition was the inside of the trachea, larynx, nasal chambers, etc., and in great part the inside of the skin, etc., but really I need not further enumerate the various positions in which this inky blackness existed. The owner had caused the slaughterer to skin the inside of one side of the thorax, but the removal of the serous membrane made no difference to the blackness; it showed one thing, however, namely, that the blackness existed below the serous membrane, which latter was quite clear and normal.

Further examination with the knife and a strong object-glass, showed that this abnormal and extraordinary blackness was mostly confined to the subjacent areolar tissue in the various parts mentioned, as well as between the muscular folds in other parts of the carcase; in fact, wherever areolar tissue was present, the blackness generally showed itself, but was most conspicuous in the positions herein first detailed. Under a very strong object-glass this blackness, or abnormal deposit, or whatever else it might be, was easily seen to be made up of innumerable minute particles, so minute that to the naked eye only one black mass was presented. Of what this black deposit consisted, unless of the colouring matter of or from the blood, I am at a loss to say, or even imagine. I am equally unable to account for the occurrence of such an extensive and extraordinary deposit, or why it was confined to areolar tissue.

Notwithstanding this peculiarly restricted abnormality in colour, I passed the carcase as fit for human consumption, but not for exposure publicly for sale. In fact, with the exceptions mentioned, the beef was thoroughly sound and healthy.

OPERATION FOR THOROUGHPIN.

BY J. FLINTOFF, M.R.C.V.S. 5TH DRAGOON GUARDS.

DURING the last eighteen months, I have had a few opportunities of experimenting on horses with Thoroughpin (not associated with,

Bog-spavin), with such satisfactory results that a description of the operation may be of interest to the veterinary profession.

After the patient has been cast and secured for operation, the method I have practised is as follows: to puncture the bursal enlargement at its most inferior point, by means of a slightly curved and pointed iron about a foot long, the part for insertion being a quarter of an inch in diameter. This is heated to white heat, and inserted into the sac till the opposite wall of the sac is reached, when the instrument is moved about so as to come into contact with as much of the secreting surface of the sac as is possible. This, of course, is done to destroy the secreting properties of the sac, and to produce sufficient inflammation to cause the walls to unite firmly together, and thus obliterate completely the previously existing bursal distension known as Thoroughpin. After the instrument is withdrawn, a small quantity of the spirits of turpentine is injected, which tends to produce a greater degree of inflammation than that produced by the hot iron alone, and further ensures the complete restoration of the parts to their normal condition. If the Thoroughpin exists on both sides of the hock, both sides are operated upon in the same way. This completes the operation.

I was induced to perform the operation above described, through seeing marks of the disease and treatment on horses in India that had suffered from Thoroughpin, one case in a well-known racing pony, and apparently with very good results.

I may state that the cases I have operated upon have been attended with complete success, with only slight traces of the operation, and thickening of the skin and subcutaneous structures remaining.

“PARTURIENT APOPLEXY IN COWS—A FORM OF SEPTICÆMIA.”

BY JOHN BRETT, M.R.C.V.S., MANSFIELD WOODHOUSE, NOTTS.

HAVING read Mr. Harrison Thomas's contribution to the VETERINARY JOURNAL for January under the above heading, I ask for space to make a few criticisms on his observations.

After carefully considering the cases and the deductions drawn, I fail to see any addition to our knowledge of the pathology of Parturient Apoplexy; neither has Mr. Thomas made it clear that he understands the special characteristics of the disease he attempts to elucidate. From his remarks in the opening paragraph, he evidently looks upon it as a febrile disease. The symptoms given do not admit of that construction, but point in an opposite direction, and are clearly those of Parturient Apoplexy, which is of a non-febrile nature.

In the earliest stages of Parturient Apoplexy 103° F. is sometimes registered, but as that is met with under certain conditions in health, it cannot be looked upon as a "febrile condition." The surface temperature in the secondary stage appears to the hand to be somewhat elevated; but if taken carefully *per rectum*, no rise is indicated, the reverse more frequently being the case.

The term "Milk Fever" is made use of, and as that name is applied very loosely to several diseased conditions met with after parturition, I propose giving a definition of what is now understood as Parturient Apoplexy, and then trace the symptoms, course, and terminations of the disease, and compare them with the cases recorded, and point out the clinical differences to those met with in "Parturient Septicæmia." I use the latter term as more applicable to animals than "Puerperal Septicæmia."

Parturient Apoplexy may be defined as congestion of brain, spinal cord or their membranes, occurring at variable intervals after parturition, in some cases only a few hours, in others several days; developing suddenly with few premonitory signs, running a short course, and, in the large majority of instances, terminating fatally; rarely occurring before the third calf, and confined principally to those with deep milking qualities.

One of the earliest symptoms met with is in the mammary gland, in which the secretion of milk is suddenly arrested; accompanying this, or often preceding it, is inactive bowels, a flabby, flexible condition of the end of the tail—this latter is not mentioned, as far as I am aware, in books, but is always present some hours before a cow "goes down," and is very diagnostic. Next comes "paddling" with the hind feet, swaying to and fro, perhaps getting up and down several times in a few hours.

In fatal cases all the symptoms mentioned in Case I. rapidly follow. "Considerable headache" hardly conveys an idea of the "head symptoms;" "there was no real paralysis." Complete paralysis rarely, if ever, occurs, except as a sequel, and not usually before the fourth or fifth day, and even later. The brain then appears less implicated. The comatose condition soon passes off; probably the spinal cord is more affected, hence the paralysis, which is generally paraplegia of the hind limbs.

Case II.—The onset, though delayed some days, was sudden, the termination rapidly fatal. Some stress has been laid on the length of time after calving; this is not unusual, neither is it uncommon for cows to recover from a first attack and succumb to a second. This is put forward as evidence in favour of the theory of zymotic origin. But why should young animals be exempt, and older ones be more prone to attacks? Even good sanitation is no safeguard; as a rule, where animals are well fed, housed, and

cared for, there the disease is only too common ; whilst under the very opposite conditions it is much less frequent. Would this be the case if it were of a septicæmic character ?

Case III. varies very little from the first two, except in “ sweating profusely.” Now can a cow sweat ? and has Mr. Thomas ever met with sudoriparous glands in the cow’s skin ? Dr. Burdon Sanderson lays great stress on the fact that there are none. “ The swollen vulva and sanious discharge ” might be caused through injury at the time of delivery.

Case IV. was an aged and evidently debilitated cow, with chronic organic disease of important organs.

Now, for comparison, take the septicæmic theory. Invasion from this cause rarely takes place so soon after parturition. Accepting for a moment that it is due to inoculation at the time of delivery, with a short and definite incubative period, the disease would be ushered in with rigors and all the accompaniments of high fever, capricious appetite, etc., etc., gradual, not sudden, arrest of milk secretion. Lameness of a metastatic character is sometimes a prominent symptom, with a recumbent position, but this could not be mistaken for the helpless condition always present in Parturient Apoplexy. The disease would run a longer course, with a greater interval between invasion and collapse and a lower death-rate. These remarks would apply whether the infection was specific or of a sapræmic character.

The fact “ that some farms have perfect immunity from the disease, whilst others have a succession of cases,” is entirely due to the age of the animals kept, and the management of them before and after calving, and not to any special sanitary regulations ; “ accumulations of filth,” “ insufficient ventilation, and pre-existing cases ” are not factors in the production of it.

In making *post-mortem* examinations of animals, it is well to bear in mind the conditions under which they were placed during life, and the position after death, never losing sight of the fact that many of the subcutaneous injuries are self-inflicted during life or in the death-struggles. These are generally more extensive than those unaccustomed to make autopsies on animals would expect, and must be carefully differentiated from diseased lesions. Neither must hypostatic congestion be taken for areas of septic infection. Unless all these circumstances are fully considered, the after-death appearances are both deceptive and misleading.

The presence of the bacteria, taken in conjunction with the symptoms, do not even “ render it highly probable that it was of bacterial origin ;” but from the description, they are probably those met with in all animals a few hours after death.

Microscopic examination of tissues after death is undoubtedly

a great aid in tracing the etiology of disease; but unless this follows expert clinical observations, it is productive of much harm, and leads to erroneous deductions. This has been clearly proved in notable instances during the last year or two. The tendency of the age seems to be to describe some microbe met with after death, and point to this as the origin of the disease; often after limited clinical experience, confined in many instances to a single outbreak only, without even taking into consideration those factors within easy reach.

A VALUABLE HYBRID.

BY J. J. MEYRICK, C.B., INSPECTING VETERINARY SURGEON, A.V.D.,
DUBLIN.

I SHOULD like to draw the attention of the colonial readers of the VETERINARY JOURNAL to the following extracts from an article, upon the cross between domestic cattle and the bison of North America, which appeared in the New York paper *Forest and Stream*, of November 29th:—

“The fact that the hybrid is fertile renders possible the formation of a new breed, which would probably be well worth introducing to Australia and the Cape Colony, where bullocks are largely employed for draught purposes. The hardiness of the animal, the great value of its hide, and the usefulness of the fleece for making into cloth, would be additional claims in its favour in those districts where there is not much demand for milk. There is little doubt but that the hybrid would maintain its health both in South Africa and Australia, the climates being very similar in temperature and dryness to that of Texas, where the bison formerly roamed in millions.”

Editorial.

THE PRODUCTION OF GENERAL ANÆSTHESIA IN THE HORSE.

IN performing delicate or protracted operations of a painful kind upon horses, recourse to the production of general anæsthesia has not been so universal among veterinary surgeons as might be desired, both on their own account and that of the animals subjected to surgical measures. The chief reasons assigned for neglecting such beneficial means, have been the long time occupied in producing narcotism, the large amount of the expensive drug needed for this purpose, the danger attending administration, and the time that elapsed before the patient recovered completely from the effects of the anæsthetic. It has been laid down as a rule to be strictly observed, that unless the drug is administered with a due allowance of air, great risk is incurred, and death may speedily ensue. Consequently, the narcotising agent has only been introduced by one nostril, the other nostril being left free for the admission of air; the result has generally been a more or less prolonged delay, and the expenditure of a large quantity of chloroform or ether, before the horse was rendered insensible, the administrator being sometimes as likely to succumb to the anæsthetic as the patient.

Evidence of all this is afforded in the remarks made at the meeting of the Midland Counties Veterinary Association, as reported on page 49 of last month's Journal. The speaker who referred to the subject, certainly did make it appear that the production of anæsthesia by a mixture of chloroform and ether was a most serious affair. Not only did the horse, which was to be narcotised, require to be prepared during two days, in order to avoid the production of abdominal pains—due to paralysis of the nerve centres of the bowels—but there was danger of shock to the heart, total arrest of breathing, and even of paralysis of one of the fore-limbs; with stertorous breathing in horses affected with Roaring. The quantity of the drug or drugs—for the agent was a mixture of chloroform and ether—required, was not mentioned, except that for one case, in which it was as much as *thirty-six ounces*! Need we wonder that there occur heart shock, stertorous breathing, suspended respiration, post paralysis of limbs, and all the other alarming phenomena described?

The institution of operation for the removal of the immediate cause of Roaring in army horses at Woolwich, has demonstrated that there is no danger in administering chloroform to horses without their inspiring atmospheric air at the same time; that anæsthesia can be induced with perfect safety in so brief a period as one to two minutes; that the

quantity of chloroform need not be more than one and a half ounce for large and small horses; and that there are no after ill-effects.

By the use of the Carlisle bag or muzzle, the whole procedure of "chloroforming" is simplified and expedited to a wonderful degree, while the risks appear to be reduced to a minimum. The bag fits closely over the lower part of the head, and very little air can enter from its upper part. When the tray with the chloroform is introduced into the bottom of the bag, the horse immediately commences to inspire deeply, just as a person does in inhaling nitrous oxide, and, sometimes struggling a little, rapidly becomes unconscious. There is no stertorous breathing, not even in Roarers; nor have there been any signs of asphyxia or heart shock observable in the large number of Roarers operated upon (somewhere about seventy), and recovery has been rapid and favourable, without any bowel disturbance. The narcotic state may be prolonged indefinitely, with care, and with only trifling renewal of chloroform.

With this great improvement in the administration of the anæsthetic, there is now no reason why it should not be more frequently exhibited to horses about to undergo operation. No preliminary preparation seems to be required, beyond that necessary for ordinary casting; and the operator himself may administer the drug, thus dispensing with an assistant.

TUBERCULOSIS AND MILK.

ALTHOUGH in the light of recent researches into the bacillary nature and communicability of tubercle by direct experiment, says the *British Medical Journal*, the consumption of milk from tuberculous cows cannot but be looked on as fraught with danger, instances in which such a mode of communication can be absolutely demonstrated are, from the circumstances of the case, not frequently met with. The fact that even in advanced stages of the disease the bacilli are often not to be detected in the milk, the generally long incubation period, and the probability that the milk supply has been changed or the animals slaughtered before palpable mischief has been done, as well as the frequency of Tuberculosis in man arising from other causes, surround with almost insuperable difficulties all observations on the human subject. But an instance has lately come under our notice which admits of no doubt, and consequently deserves record. The owner of a valuable herd of cows, finding that a large proportion of them were tuberculous, so large a proportion, indeed, as strongly to suggest infection by association in the sheds, withdrew his milk from the market, and used it, unfortunately without boiling, for fattening his pigs, of which he has a large number, and on which he prides himself not less than on his cows. The result has been that the pigs have, almost without exception, been affected with the disease to an extent that has necessitated the slaughter of the whole stock. Another point of practical interest is that he has not been able to discover nodules or other indications of localised tubercle in the cows' udders, a condition still held by some to be necessary to render the milk capable of transmitting the disease. It is much to be regretted, too, that the legal definition of disease in the cow, as laid down in the Dairy and Cowshed Orders, does not include Tuberculosis, but is limited to Cattle-plague, Pleuro-pneumonia, and Foot-and-mouth disease. This definition should be made to include Tuberculosis and all eruptions of the udder.

"SURRA" IN ANNAM.

AT the meeting of the Central Veterinary Society of Paris in December, the report of a Commission appointed to examine a paper by Army Veterinary Surgeon Blanchard, "On a special disease affecting mules at Tonquin," was read and discussed. From M. Blanchard's description, there can be no doubt as to the disease which he had investigated, and which had caused the death of a number of artillery mules (imported from France, it is to be presumed) in Cochin China. The symptomatology, course, and necroscopical appearances are those of the malady now so well known to English Army veterinary surgeons by its destructiveness in India and Burma as "Surra," and Blanchard's discovery of the peculiar motile micro-organism which revels in the blood, and appears to attack the red corpuscles by preference, is confirmatory of identity. M. Blanchard examined the forage and water upon which the mules were fed, but could find nothing in the way of a clue to the source of these hæmatozoa; though he considered that bad and improper food, and exposure to fatigue and the weather, favoured their invasion and development in the body.

ACTINOMYCOSIS IN MANKIND.

WE were lately invited to the Brompton Hospital for Consumption and Diseases of the Chest, to see a case of Actinomycosis, the first observed in the living subject in this country. The patient was a boy about eleven years of age, son of a dairyman in the Midlands. Illness commenced about six months previously, and he was sent up to the hospital, where he was supposed, on admission, to be suffering from Empyema. The trocar being applied, however, no pus escaped, and soon after the lower part of the right side of the thorax began to bulge and consolidate. At our visit there was a large flattened discoloured tumour in this region, with numerous patches of ulceration from which a slight discharge escaped. This discharge, on being spread on thin cotton-wool and held up to the light, showed an abundance of small nodules; these contained the actinomyces. Near the spine, on the right side also, another tumour was in course of formation; its surface was about to undergo ulceration. The vertebræ in this situation were evidently involved in the morbid process, as the spine was distorted to some extent. The case was considered hopeless; indeed, the poor little boy was in a state of extreme marasmus and debility, and could not possibly live long.

ANTHRAX EXPERIMENTS IN NEW SOUTH WALES.

THE Board appointed on August 14th last to watch and report upon the experiments that have just been made at Old Junee, New South Wales, by the representatives of M. Pasteur, of Paris, in demonstrating the efficacy of M. Pasteur's vaccine of Anthrax as a preventive against Anthrax (Cumberland) disease in sheep and cattle, has been presented to the Government of that colony. It is as follows:—

We have the honour to submit our report upon the experiments recently carried out at Junee, by Dr. Germont and M. Loir, the representatives of M. Pasteur, for the purpose of demonstrating the efficacy of his vaccine of Anthrax as a preventive against Anthrax, *i.e.*, Cumberland disease, and we have to congratulate those gentlemen and the colony on the unqualified success of their demonstration.

During the early part of August last Mr. T. W. Hammond, of Junee, was asked if he would allow the experiments to be carried out on his run, when that gentleman at once placed some thirty acres of land adjoining the railway line, about a mile from Junee Junction, at the disposal of the Board.

The site was inspected and found in every way suitable, and the necessary fencing and buildings were erected under Mr. Devlin's supervision.

FIRST VACCINATION.

Dr. Germont submitted a programme of the proposed demonstration (similar to that by M. Pasteur at Pouilly-lé-fort in 1881), which was approved by the Board, who proceeded to Junee on September 3 to witness the first vaccination. In order to ensure that none of the stock were infected with the disease, thirty-nine sheep and six head of cattle had previously been purchased at Cootamundra, an uninfected district, and of these twenty sheep and four cattle were vaccinated by Dr. Germont, assisted by M. Loir, on September 4th, under the supervision of the Board.

The sheep were vaccinated on the inner side of the off thigh by the hypodermic injection of one-eighth part of a cubic centimetre (about two minims) of attenuated virus of Anthrax—"first vaccine of Pasteur." The cattle were similarly operated on behind the shoulder, each receiving one-fourth part of a cubic centimetre, *i.e.*, four minims, of first vaccine. The temperature of each animal treated was taken immediately afterwards, the normal temperature being, sheep, 103° to 104° ; cattle, 101° to 102° . It was also taken on the 5th, when a general rise of the temperature of the sheep was discerned, and in the case of one of the sheep had risen to 106.2° . On the following day the temperature had in most cases slightly fallen. This was also the case in regard to the sheep whose temperature had reached 106° . Another had gone up to 106° , but was on the following day found to have gone down to 102.3° . The sheep between this and the second vaccination continued to be closely watched, but exhibited no symptoms of being affected by the operation.

SECOND VACCINATION.

The members of the Board (with the exception of Mr. Lamb, who was unavoidably absent) attended at Junee on September 18th to watch the second vaccination, when Dr. Germont and M. Loir re-vaccinated the twenty sheep and four cattle, this time with the same quantity of Pasteur's second vaccine of Anthrax. The temperature of the animals was taken immediately afterwards, when it was found that it corresponded with that of the previous vaccination. On the following day a considerable rise of temperature was noticeable in those sheep which had shown no rise after the first vaccination, some of them going as high as 107° . On the following day there was a considerable fall in nearly all the sheep except one, which registered 105.2° . The vaccinated and unvaccinated animals were allowed to run together, but no ill effects were noticed.

On September 18th Dr. Germont also inoculated two sheep, in the presence of the Board, with a cultivation of the virulent virus of Anthrax (Cumberland) disease. This virus had been originally procured by the Government veterinarian (Mr. Stanley), in May last, from Mr. A. A. Devlin's sheep at Uarah, and was handed by him to the Government Analyst (Mr. Hamlet) on September 13th for this inoculation, the object being to test its efficacy and, if still effective, to obtain a supply of fresh virulent virus for the demonstration. As showing that the virus had lost none of its vitality, the two inoculated sheep died at 8 p.m. on the following day, being thirty-two hours after inoculation. Careful post-mortem examination of these sheep by Mr. Stanley and Mr. Devlin, in the presence of Mr. Hamlet and Dr. Germont, showed unmistakable indication of the disease Anthrax, and the microscope revealed its characteristic bacilli. Blood was taken by Mr. Hamlet from one of these sheep for the purpose of preparing a cultivation for the final test, and the cultivation was carried out in his laboratory in Sydney, under his supervision, by M. Loir.

INOCULATION OF SHEEP WITH VIRULENT VIRUS FOR DEMONSTRATION.

The cultivation prepared under Mr. Hamlet's supervision was taken on September 29th to Junee Junction, and on the 30th three sheep were inoculated with different quantities of this cultivation by Dr. Germont, in the presence of Mr. Devlin and Mr. Bruce, at the experimental station, with the view to have the deaths occurring at different times for the purpose of the demonstration. Of these, the first sheep died at 6 a.m. on October 2nd, thirty-four hours after the inoculation; the second at 3.30 p.m. of the same day, forty-three and a half hours after inoculation; and the third sheep at 9 a.m. of the 3rd, fifty-nine hours after inoculation.

FINAL EXPERIMENTS AND DEMONSTRATION.

All the members of the Board attended at Junee on Tuesday, the 2nd October, together with Dr. Thompson, of the Board of Health, the Chief Inspectors of Stock for Victoria, Queensland, and Tasmania, and the Government Veterinarians for Victoria and Tasmania. There were also present a considerable number of delegates from the Pasture and Stock Protection Boards, and a good many inspectors of stock and visitors from different parts of the colony, in all about 200 people. At 3.30 p.m. one of the sheep inoculated on September 30th died, as anticipated. After *post-mortem* examination and inspection of the blood under the microscope, and the Board being satisfied as to the cause of death, Dr. Germont and M. Loir commenced at 4.45 p.m. the inoculation of the thirty-nine sheep with the blood of this sheep, doing the vaccinated and unvaccinated sheep alternately, using the same syringe and the same quantity of blood for each, viz., one-eighth part of a cubic centimetre, equal to two minims. The six head of cattle were also inoculated with blood from the same sheep and with the same syringe, receiving one-fourth part of a cubic centimetre. The whole of the sheep, both vaccinated and unvaccinated, were then placed in the same enclosure, fed upon the same food, and drank from the same trough. Green food was scattered about the floor upon which the unvaccinated sheep were dying, and sanious discharges contaminated the food. The vaccinated sheep, in addition to the inoculation, also had to undergo the risk of contracting the disease by taking up the blood or other excreta from the unvaccinated sheep which died in the same pen where they were confined and fed for four days after the inoculation took place.

The first of the nineteen unvaccinated sheep succumbed to the disease at 8.15 p.m. on 3rd October, being about twenty-seven hours after inoculation, and the last of that number died at 5.30 a.m. on Friday, 5th October, sixty hours fifteen minutes after inoculation. Of the two unvaccinated cattle (Nos. 88 and 33), the former died at 10.30 p.m. on Saturday, 6th October, while the latter, though having been very ill, is likely to recover. Mr. Stanley made a *post-mortem* examination of all the sheep that died, and found the lesions of Anthrax very decidedly indicated in every instance. The diagnostic changes were the black, semi-fluid blood, the enlarged, softened, blackened spleen, and the dark, bloody colour of the urine. These conditions were well marked in each case. During the examination the changes produced by the disease, such as the blood-stains, patches of inflammation in various parts of the body, the gelatinous, bloody effusion at the point of inoculation, and other points of interest were explained to the visitors. A healthy sheep was killed for the purpose of comparison of the organs with those of a diseased sheep; the blood of the same was examined and exhibited.

In order to remove any possibility of doubt as to the cause of death, the Board requested Mr. Hamlet (Government analyst) to examine the blood of the sheep as the *post-mortem* examinations were made, and in every case the

blood, when submitted to that test under the microscope, contained *Bacilli anthracis*.

At the request of one of the visitors present (Mr. R. G. Higgins) a sheep which had been protected by vaccination, and afterwards inoculated on September 12th, was killed, but did not show any trace whatever of the disease, neither was there any effect upon the wool. This was eighteen days after inoculation. Some additional experiments are being made by the Board, to ascertain, if possible, why travelling sheep are more subject to the disease, and if there is any difference in the *post-mortem* appearances of inoculated and naturally infected sheep; but as sufficient time has not yet elapsed, it is premature to offer an opinion thereon. The results will form the subject of an additional report.

OPINION OF THE BOARD.

After carefully watching the whole series of experiments, and giving the subject the fullest consideration, the Board are unanimously of opinion that Dr. Germont and M. Loir have conclusively demonstrated the efficacy of M. Pasteur's "vaccine of Anthrax" as a preventive against that disease, and therefore recommended its adoption and use. In conclusion, the Board desire to express its appreciation of the untiring efforts of Dr. Germont and M. Loir, by whom the late demonstration was made most interesting and instructive to the large number of gentlemen attending. The Board also wishes to express its appreciation of the able and efficient manner in which the duties of secretary have been discharged by Mr. E. C. Weller.

J. DE V. LAMB, *Chairman*.

WILLIAM M. HAMLET.

ALEX. BRUCE.

EDWARD STANLEY, F.R.C.V.S.

ARTHUR A. DEVLIN.

ANTHRAX IN SHEEP.

IN the Legislative Council of the Parliament of New South Wales, on November 7th, Mr. Stewart asked the Attorney-General: "1. Is it true that Government is in any way committed to the approval of M. Pasteur's vaccine against Anthrax in sheep? 2. If so, has Government taken any security that losses from Anthrax after vaccination shall be made good? 3. Have the veterinary colleges or schools in England, Scotland, Canada, the United States, France, Germany, or Italy adopted or recommended the employment of M. Pasteur's vaccine?"

Mr. Simpson replied, "The demonstration given by M. Pasteur's representatives having proved thoroughly satisfactory, some of the owners of infested country who are desirous of protecting their sheep before the dangerous season sets in have asked the Government to make an arrangement for them with Pasteur's representatives for the vaccination of their sheep. As this would be an extended and confirmatory experiment, the Government are endeavouring to facilitate the proposed arrangement, but have themselves as yet made no agreement with M. Pasteur. 2. It will be seen from the preceding answer that this is not a Government matter, but that the owners who wish to make the arrangement are prepared, after what they have heard of the success of the vaccination in France and elsewhere, supported as this has been by the Junee demonstration, to give the operation a trial without guarantee. 3. I am not in a position to say whether the veterinary colleges and schools in the countries named in the question have adopted or recommended the employment of M. Pasteur's vaccine; but the editors of the

leading veterinary journals of Great Britain—the *Veterianarian* and the *VETERINARY JOURNAL*, London—have both acknowledged the efficacy of Pasteur's vaccine of Anthrax, and approved of its use. As bearing on this part of the subject, I would add that the Government of India has concluded an arrangement with M. Pasteur for the supply and use of his vaccine on exactly the same terms as those offered to this colony, that its use in France is every year on the increase, and that it is now used in Belgium, Germany, Austria, Brazil, and the Argentine Republic."

TUBERCULOSIS IN THE UNITED STATES.

PROFESSOR LAW, F.R.C.V.S., Cornell University, has been applying himself for some time to the question of Tuberculosis in the United States of America. In the course of an interview published by the *New York Herald*, he said, "The public have no idea of the overwhelming importance of the subject. A case of Yellow Fever or Smallpox occurs, and instantly there is a call for seclusion, quarantine, and all possible sanitary safeguards, while in every street, in every tenement house, and in nearly every stable we find the victims of this contagion, which is slaying our population by the tens and hundreds of thousands yearly. In cattle I have seen the introduction of a tuberculous animal infect a whole herd of sixty head in a few years. The many and varied experiments of Gerlach and others showing the communication of the disease from animal to animal by the use of the diseased meat and milk, the direct experiments of Villimin and his followers in the production of the disease by inoculation, and the culture experiments of Koch and his successors, in which the bacillus was grown on pieces of bread, potato, etc., and transferred from these to the animal system, leave nothing to be desired in the way of proof. I have on more than one occasion found a tuberculous family in Brooklyn living largely on the milk of their tuberculous cow. In another case an invalid lady began to improve and gain in strength when she gave up using the milk of a tuberculous cow; and perhaps the most striking case in my experience was that in a large public institution, where more than half the dairy cows were tuberculous, a much larger proportion of the human inmates were found to be the victims of this disease than in any similar institution elsewhere." The cow has certainly an unenviable reputation in Tuberculosis. It prevails largely in countries where cattle are abundant—in all the agricultural countries of Central and Southern Europe, in Algiers, Australia, Tasmania, New Zealand, the United States, Canada, and the Pampas; whereas it is comparatively rare in the New Hebrides, Iceland, and the northern parts of Norway, Sweden, Lapland, and Finland. Dairy cows are usually fed in a manner to elicit the largest possible yield of milk, and this with little consideration as to whether such diet is fully adapted to nourish and invigorate the system. Moreover, they are called upon to maintain this milk yield as long as possible, without the consideration that they are at the same time carrying a calf, and under this double drain the system is undermined, and it becomes an easy prey to the tubercle bacillus. The temperature of the cow is *par excellence* the temperature which is favourable to the growth and propagation of the bacillus—102 degrees Fahrenheit, or a little over, internally. Other things being equal, therefore, the temperature of the cow renders the system more favourable to the growth of this disease-germ than does that of man, 98.5 deg.; of the horse, 99.5 deg.; or of the dog, 99.5 deg. In view of the daily danger thus involved in drinking milk, Professor Law was asked how he proposed to minimise it. He replied, "There must be inspection of the dairy herds furnishing it. A microscopical or chemical analysis of the milk is not enough, as the bacillus is found only with the

greatest difficulty in this fluid, and the infection of a dyspeptic child may attest its presence when thousands of microscopic tests of the same class have been made in vain. Milk brought from a greater distance, and which has passed through the process of boiling or condensation, is practically safe, as the germ is destroyed by the heat. It is the fresh milk, and above all the warm milk, that is dangerous. From a herd of cattle, any of which has a cough, a nasal discharge, or an enlarged gland, a little of the product may be taken for microscopic examination, and the status of such herd or animal may be determined by the result. From the attendants on such a herd any one with a cough or expectoration may be tested in the same way; and if the bacillus is found, prudence would suggest that he be removed from a position which makes him a source of danger to the community. To protect the milk consumers it is essential to expel all but sound cows and sound attendants."

THE NEW FIRE-ARMS IN RELATION TO VETERINARY SURGERY.

(Continued from vol. xxvii., p. 425.)

RUBINI RIFLE.—Distance, 100 yards.

FIRST CARCASS OF HORSE.

1st Shot (from the Front—Arm-bone).—Orifice circular, immediately opposite the shoulder-joint. From the orifice there was escape of joint-oil. Bullet entered on inner side of insertion of tendon of flexor brachii, striking the neck and body of the arm-bone (humerus), pulverising that portion. There was no splitting or fissuring into the articular (joint) surfaces. The muscular tissue surrounding the fracture was disintegrated, filled with bone *débris*, and fragments of lead and copper. After passing through the humerus, the projectile went through the triceps (large muscle behind shoulder-blade), disorganising the muscular tissue, and came out six inches above the elbow.

2nd Shot (from the Front—Chest).—Bullet entered the centre of the chest between the two first ribs, just above the cartilage of the sternum, penetrating the anterior lobe of right lung, passing into right auricle of the heart, making a rent of $2\frac{1}{2}$ inches in diameter through the right ventricle, lacerating the partition between the two ventricles (septum ventriculorum), passing out at the apex of the left ventricle through a hole $1\frac{1}{2}$ inches in diameter, lacerating the heart sac (pericardium), passing through base of the diaphragm, penetrating in three places the large intestine (transverse colon), going through the abdominal walls, and lodging above straight abdominal muscle (rectus abdominus), one foot in front of the umbilicus. Chest full of blood, in which was found a quantity of food from the intestine. Copper covering not removed from the bullet.

Hind Leg Shot.—The bullet penetrated the anterior part of middle third of leg, pulverising the leg bone above hock (tibia), and passing out at the back of the limb. Portions of copper and lead found in the wound. The fracture did not extend into the joint (articular) surfaces; but it was observed, both in this and other wounds, that there were extensive sub-periosteal fractures of bone which would have rendered an accurate diagnosis very difficult.

3rd Shot (from the Front—Knee).—Bullet penetrated upper joint of knee, smashing the inferior extremity of the fore-arm bone, and pulverising its compact tissue, so much so that in opening the knee-joint, which was full of blood, a racket-ball could easily have been placed in the cavity formed by the bullet. The upper row of knee bones was smashed, and the bullet had passed out behind.

4th Shot (Flanking Shot—Thigh).—The upper part of thigh bone femur

(trochantor major) lying in fragments ; head of femur completely separated. Upper third of the femur had practically disappeared, and all that represented it was a considerable quantity of bone fragments and bone *débris* driven into the muscular tissue which had surrounded the bone. The smashing up effect was almost beyond description.

5th Shot (from the Front—Foot).—The bullet entered an inch below the coronet, through an opening over which the horn fibres had so arranged themselves that it was quite impossible to believe that a bullet had penetrated the foot. *This is a point of clinical importance.* In the inner surface of the wall of the hoof the bullet wound was quite perceptible, and in the sensitive laminae it was large enough for the index finger to be introduced. In laying open the joint, the foot (pedal or coffin) bone was found in fragments, or rather pulverised, and the navicular bone was fractured in three places. The bullet had passed through the perforans tendon, and made its exit through cleft of frog.

Miss Shot for Arm-bone.—Missed the arm-bone (humerus), but entered the chest two inches on inner side of shoulder-joint, where the muscular tissue of the large extensor muscle of arm (flexor brachii) commences. The bullet passed underneath the axillary artery and vein without injuring either, downwards and backwards into the great chest (pectoral) muscles, from the posterior part of which it was extracted. Along the track of the bullet there was complete muscular disintegration. Penetration from point of entry, 19 inches. Bullet smashed, and portions of copper covering left in the wound.

Distance, 50 yards.

SECOND CARCASS OF HORSE.

6th Shot (Flanking—Neck).—The bullet entered the left side of the neck, pulverising the fifth cervical vertebra, dividing the spinal cord, and passing out at the opposite side of the neck.

7th Shot (Flanking Shot—Shoulder).—The bullet entered about the centre and behind the spine of the shoulder-blade, passing through, drilling a clean hole at the point of entry, slightly fissuring the bone at exit. Thence it passed into the body of the first dorsal vertebra, pulverising the bone and fracturing the superior spinous process. The spinal cord was completely divided and the bullet smashed up.

Miss Flanking Shot for Shoulder.—The bullet penetrated the large (triceps) muscle posterior to the shoulder-joint, fracturing the second rib, penetrating the lung, and dividing the vessels in front of the heart, filling the chest with blood. Portions of the copper covering of the bullet were found in the wound. Bullet not found.

8th Shot (Flanking Shot—Shoulder).—Bullet entered 2 inches above the elbow-joint, completely smashing the arm-bone (humerus) and lodging in the front cartilage (cariniform) of the sternum, against which a quantity of the copper covering of the bullet was found.

9th Shot (Hind-quarter).—The bullet went right through the muscle of the croup, passing underneath the sacrum. Aperture of exit about 1 inch in length ; muscles considerably pulped.

ENFIELD-MARTINI RIFLE.—Distance, 100 yards.

FIRST CARCASS OF HORSE.

10th Shot (from the Front—Arm-bone).—Struck the off-shoulder. This shot passed through the powerful tendon of the flexor brachii muscle, then struck the head of the humerus (arm-bone), completely smashing it, and also comminuting the shaft longitudinally. It afterwards traversed the large

mass of muscle behind the above-named bone (called the triceps), and passed out. It re-entered the skin of the chest about 8 inches farther on, near the "spur-vein," travelled under the skin for 10 inches, and lodged. The bullet was cut out, and was found to be somewhat "mushroomed," but otherwise unbroken.

11th Shot (from the Front—Chest).—Struck the chest slightly to the left of the median line, cut through the large axillary artery, entered the right auricle of the heart, passed through the septum, and escaped through the left ventricle, tearing the muscular wall considerably. The orifices of entry and exit of the cardiac wounds were about an inch and a half to 2 inches in diameter. The bullet then pierced the diaphragm (midriff) and wounded the large intestines eight times, owing to the curvatures of the bowels. Careful search for the bullet was fruitless.

12th Shot (from the Front—Knee).—Struck the radius (forearm-bone) 2 in. above the left knee, completely smashing it for some distance longitudinally, as well as pulverising the bone in the neighbourhood of the point of impact. The fracture extended to the knee-joint, but the small bones were uninjured. The bullet passed out, and no lead was found in the wound.

13th Shot (from the Front—Foot).—Struck the hoof three-quarters of an inch below the coronet, making a clean and well-defined hole through the horn, pulverised the pedal bone, smashed the navicular bone, split the small pastern bone (os coronæ). It then passed through the flexor tendon and gained exit through the "frog."

14th Shot (Flanking Shot—Thigh).—Struck the left femur (thigh-bone) about one-third from the upper end, having first, of course, passed through the covering muscles, making a clean tunnel through them. The bone was considerably pulverised and comminuted, and the bullet was found flattened and lying amongst the *débris*. The shaft of the bone was utterly broken up, as above described.

Distance, 50 yards.

SECOND CARCASS.

15th Shot (Flanking Shot—Neck).—Struck the neck, passed clean through the muscular structures just above the vertebræ, missing these, and out. The wound was a clean-cut tunnel. The orifices of the entrance and exit were small.

16th Shot (Flanking Shot—Shoulder).—Struck the back of the left scapula (shoulder-blade) at its posterior edge, about three inches from the top, carrying away about half an inch of it; then struck the ninth rib, fracturing it; pierced the anterior lobes of the lungs and both auricles of the heart. These heart wounds were of a frightful description, and were probably largely due to splinters of bone from the ribs. The greater part of the outer walls of the auricles was destroyed. A large fragment of the bullet was cut out from under the skin of the off side.

17th Shot (Flanking Shot—Shoulder).—Struck the middle of the humerus (shoulder-bone); pulverised and comminuted it badly; passed through the anterior chest (pectoral) muscles and flexor brachii on the off side, just above and in front of the elbow joint, and out.

18th Shot (Hind-quarter).—Struck the upper part of the quarter on the off side, traversed the large and bulky muscles in the region of the croup, making a clean passage about three-quarters of an inch in diameter; struck the sacrum (a part of the bony spine), pulverising it for a diameter of three inches, and traversing the muscles on the other side, gained exit.

Sir Thomas Longmore, Professor of Surgery at the Medical School, Netley also attended the experiments by direction, and furnished the following, notes :—

The bullets employed in the experiments were of two kinds—(1) the Enfield-Martini, or, as I heard it sometimes called, the Metford bullet, the diameter of which was $\frac{4}{10}$ of an inch (0.402 inch); and (2) a Swiss bullet, the Rubini bullet, having a diameter of a little under $\frac{3}{10}$ of an inch (0.298 inch). The Enfield-Martini is a solid bullet, and, I believe, of hardened lead, with a slight concavity at the base, is $1\frac{1}{4}$ inch long, and weighs 384 grains; the Rubini, a solid leaden bullet, also, I understand, hardened with a proportion of tin, is covered by copper sheathing, has a deeper concavity at the base than the Enfield-Martini, is $1\frac{1}{8}$ of an inch long, and weighs 217 grains. The copper sheath, though in close contact with the leaden core of the bullet, is not united to it, so that in instances in which the bullet was broken up by collision with bone, portions of the copper were found in detached fragments varying in size, and more or less coiled and distorted. The Enfield-Martini projectile was fired with a charge eighty-five grains of service black powder; the Rubini with a charge of seventy grains of compressed meal powder. The former started with an initial velocity of 1,570 foot-seconds; the latter with an initial velocity of 1,851 foot-seconds. The distances from which the shots were discharged at the carcasses of the horses, who had been killed shortly before the experiments were instituted, were 200 and 100 yards.

With regard to the general results of the shots, it did not appear to me that there was any noticeable difference between those which were effected by bullets fired at 200 yards, and those at 100 yards, and as in air the Enfield-Martini bullet would travel over a distance of 523 yards and the Rubini over 600 yards, in the first second of time of its flight, there could be scarcely any appreciable difference in the rates of velocity possessed by the projectiles at the time of striking the carcasses, whether they were fired from either one or other of the two distances named.

From what I have read in published reports of the effects of the Lorenz narrow steel-plated bullets in Germany, I anticipated that the narrow Rubini bullet, on being brought into collision with bone, would effect a clean perforation through it, without causing much surrounding damage; but, contrary to this anticipation, I witnessed an amount of local destruction and extensive injury done by it on the horse bones and neighbouring structures, such as I have never seen done in the human body by rifle projectiles, even in experiments on cadavers at short ranges. In one instance, when the thickest part of the thigh-bone had been aimed at and struck by the Rubini bullet, the trochanteric region, a pit was left in the bone about the size of the hollow of my hand, in which the osseous structure was ground up as if it had been pounded in a mortar, while all round the bone was broken into countless fragments, the articulating head, although not directly struck by the bullet, being completely rent into separate parts within the acetabulum. I did not detect the same extent of fissuring prolonged from the site of impact of the projectile, along the shafts of the bones fractured by them, that I have frequently seen effected by cylindro-conoidal bullets of greater diameter, but, owing to the thickness of the periosteum covering the bones, such fissures may have existed, though only capable of being recognised after maceration and more deliberate inspection.

The only instance in which I saw a clear hole made by either of the two kinds of bullet, was one in which there was a perforation of the comparatively thin supraspinous portion of the scapula by a Rubini bullet. In this example a piece of bone of about the same diameter as the bullet was, as it were, punched out, there not being any surrounding splintering. But after passing through the scapula, the bullet had smashed up a rib beneath, had literally pulverized the body of the second dorsal vertebra, and had done extensive damage to the viscera within the chest.

One special purpose of the experiments was to ascertain from them how far

wounds inflicted by very narrow bullets would be likely to have a stopping effect on horses, on a charge of cavalry, for example. The horse does not appear to suffer from shock or from mental disturbance when wounded, so that hardly any comparison can be made between the influence of gunshot wounds in this animal and in a soldier, even though the wounds may apparently correspond in extent and gravity, so far as material conditions are concerned. As a considerable number of distinguished officers of the Veterinary Department took part in the experiments, their report will no doubt enable a conclusion to be come to on the stopping effect on horses of such wounds as we saw caused by the two bullets, so far as it is practicable to form one from observations on the animals after death.

As to the probable surgical consequences that would ensue from the introduction into warfare of such a narrow projectile as the Rubini bullet, it seems to me only a reasonable inference, from the characters of the wounds on the horse carcasses that I had the opportunity of examining, and taking into consideration the extremely high rate of initial velocity impressed on the projectile, the limited amount of resistance, owing to its shape and dimensions, that it would meet with from the air during its flight, and, consequently, the very long range over which it would retain penetrative and destructive power in regard to the human body, that there is no ground for imagining either that the number of wounds inflicted in warfare and requiring surgical treatment would be lessened, or that on the whole the wounds would be likely to be less severe in their nature than those which surgeons have been accustomed to from the heavier and larger bullets that have been hitherto in use; presuming, of course, that the narrow bullets so introduced possessed all the qualities which distinguish the Rubini projectiles. In particular cases, especially when the speed of such a bullet had been partly expended, the narrowness of a projectile like the Rubini projectile would enable it to pass through parts of the human body, without inflicting damage on immediately adjoining and important structures that could not escape from broader bullets; but this surgical advantage would, I fear, be quite counterbalanced by the increased penetrative power, and therefore probably increased number of wounds inflicted, as well as by the greater injury done in those wounds which would be inflicted by the projectile, particularly when a bone happened to be struck, at relatively short ranges, while it was still armed with its higher rates of velocity.

It might be interesting to have similar observations made with bullets possessing the characteristics of the Rubini bullet, but fired with reduced charges, so that at the time of inflicting the injuries they might more closely resemble in their conditions those which would exist after they had traversed ranges of 600 or 700 yards, or other distances at which wounds would be likely to be chiefly inflicted in actual warfare. If, however, the experiments, are made, as those which I witnessed were, on the carcasses of horses, it must, I imagine, always remain a matter of some doubt how much the greater resistance which is offered by the massive bones of the horse to the projectile, acts in modifying the characters of the injury effected, as compared with the results that would ensue, supposing the resistance to be reduced to what it would be in corresponding bones of the human body.

PROSECUTIONS BY THE ROYAL COLLEGE OF VETERINARY SURGEONS, UNDER THE VETERINARY SURGEONS ACT.

REDDITCH PETTY SESSIONS.—19th December, 1888. Before R. S. Bartlett, W. H. S. Rynnersley, and W. Avery, Esqs.—Walter Wiggilsworth was charged with having on the 16th November, at Redditch, practised as a veterinary surgeon without being entitled to do so. Defendant asked for an adjourn-

ment in order that he might procure legal advice and witnesses. He stated that he only received the summons on Monday afternoon, and on Tuesday went to see a gentleman at Stratford in connection with the matter. Mr. F. Lawson Lewis, solicitor, instructed by Mr. Thatcher, solicitor, on behalf of the Royal College of Veterinary Surgeons, objected to the adjournment, and said he was prepared to go on with the case. Defendant said he had spent £650 on his education as a veterinary surgeon, and under the old rules he was entitled to use the title of veterinary surgeon. Mr. Lewis said there was only one possible defence, and that was that Defendant's name appeared in the register; if it were not there a conviction must follow. He further said that persons who had practised for a certain time before 1881 were allowed twelve months to get their names on the register, on application to the Royal College of Veterinary Surgeons. It appeared that Defendant had omitted to comply with the regulation, and the Bench fined him £1 and 14s. 6d. costs, together with the solicitors' fees, amounting to £2 15s. 6d. in all. He was allowed a fortnight to pay, and in default to be imprisoned for one month with hard labour.

THAMES POLICE COURT.—28th December, 1888. Before Mr. Lushington.—Mr. W. Chiswell, trading under the style of Chiswell and Co., of 123, New Road, Whitechapel, was summoned "for that he being a person other than a person who, for the time being, was on the register of veterinary surgeons, or at the time of the passing of the Veterinary Surgeons Act, held a veterinary certificate of the Highland and Agricultural Society of Scotland, did take or use the title of veterinary surgeon." Mr. Colam, barrister, instructed by Mr. Thatcher, solicitor to the Royal College of Veterinary Surgeons, prosecuted. Charles Davis, clerk to the solicitor of the Royal College of Veterinary Surgeons, produced the registers, and deposed that Defendant's name did not appear in either of them. He had seen the board outside Defendant's place, on which was "Chiswell & Co., M.R.C.V.S. Horses attended to." Defendant had been previously cautioned. Defendant, in answer to the charge, said he had been in practice in London for the last thirty years, and could undertake anything in connection with a horse with any one belonging to the College of Veterinary Surgeons. He had a partner, a Mr. Sangster, who was a fully qualified man. Mr. Lushington said Defendant in 1881 might have put himself on the register, but did not choose to do so. It was clear his board led the public to believe he was a veterinary surgeon. Such a practice must be stopped. He would be fined £10 and £3 3s. costs. The fine not being paid, Defendant was committed to Holloway prison for twenty-one days.

"SANITAS."

WE have lately had an opportunity of testing the deodorising and disinfecting properties of the substance prepared from turpentine, known as "Sanitas," and have been much impressed with its valuable properties, which would appear to entitle it to a high, if not the highest, place among articles of this class. For veterinary purposes it possesses great advantages, especially in surgery, and as a parasiticide, an antiseptic, a disinfectant, and a purifier of stables, cow-sheds, and dog kennels, as it is easily applied and is absolutely safe, while its odour is far from unpleasant. In the form of powder, sawdust, emulsion, fluid, soap, jelly, or ointment, it meets all requirements, and the Sanitas Antiseptic Gauze is a most useful dressing—supplemental, if need be—for wounds.

The new bactericides of Mr. Kingzett, also prepared by the Sanitas Co., promise to be of great service in destroying all toxic products by oxidation, they being also destructive of micro-organic life, germs, and spores; they

retain these properties even when in contact with mucous membranes and other tissues, as they do not, like many other articles of this kind, coagulate albumen. The mercuric bactericide contains as active principles five per cent. of mercuric chloride (corrosive sublimate), and five volumes of peroxide of hydrogen, combined in such a form that the solution keeps permanently free from precipitation, and without loss of strength. It should be of immense utility during the performance of operations, and in dressing wounds and unhealthy surfaces or cavities.

IN VINDICATION.

RECOGNISING the truth of the axiom that there is a time for silence and a time for speech, I have not hitherto intruded my personality on the readers of the *Journal* with the object of defending myself from the disgraceful attacks made upon me by two or three individuals, in professional and other periodicals, in relation to the subject of operation for Roaring. To mention their names would be to name their motives—detraction and defamation. It is a remarkable circumstance that laryngeal surgery, human and animal, should excite such discreditable feelings, such degrading exhibitions, as we have had in London and Berlin; and if in our own profession the rancour, untruthfulness, and bad taste have all been one side, it was only because the other side treated the utterances of these individuals with the contempt they so richly merited. Perhaps this was not the most judicious course to have taken, as silence may have implied assent to the unfounded statements, and it might have appeared more effective to have shown up the tactics of the unscrupulous and vindictive—to have figuratively “nailed the lies to the counter,” as shopkeepers used to do with base shillings, sham half-crowns, or bad dollars.

But I considered I was best consulting my own dignity and that of the profession, by preserving silence; and if I break this now, it is because I feel that my motive in refraining from vindication might be construed as due to pusillanimity, and so create a notion that such attacks might be indulged in with impunity, or that the unfounded statements might have some truth in them. That I am right in this surmise may be inferred from the remarks made by Mr. Jones, of Leicester, at the meeting of the Midland Counties Association, on “The Cure of Roaring,” as reported at page 49 of last month’s *Journal*. When misrepresentation extends from the London clique to the provinces, and is introduced at a large gathering of members whom I hold in much esteem, I think it is high time, for our collective credit, to venture on vindication. Within a very brief period—a few months—Mr. Jones appears to have acquired an immense amount of information on everything connected with the subject he introduced; and in regard to this, I should be inclined to felicitate him exceedingly for his commendable energy in procuring knowledge, even at second or third hand, had he refrained from introducing personalities. He was not ashamed to charge me with “an attempt to obtain credit under false pretences,” and he gave second-hand evidence to prove his statement. So far as this country is concerned, he adduces Gamgee as having opened the horse’s larynx some years ago, and Messrs. Horsley and Clarke in 1887. I have carefully examined English veterinary and kindred literature up to the end of 1887, and I challenge Mr. Jones, or any one else, to give me evidence therein that the horse’s larynx was ever opened for intra-laryngeal operation in this country, previous to my attempts. Of course, it was inevitable that Gamgee’s name should be introduced, and I do not deny that he may have performed such an operation as the above; but I can find no record of it anywhere, and therefore I cannot be charged with knowingly borrowing from him. Mr. Dollar (distinguished from another of the

same name by the initials J. A. W.), in two publications, asserts that Mr. Gamgee operated in 1886-87, a period sufficiently near as to be within the memory of most men; and yet I can obtain no information confirmatory of the statement; everything would go to show that if the distinguished professor were operating at all in these years, it was not upon horses. But Mr. Dollar in this matter evidently values fiction far beyond fact, and therefore it is that in his effusions we find, in the words of the satirist, "a lie in nearly every line." Clarke's *experiments* date no farther back, according to his own statement, than the middle of 1887, and nothing was published concerning them until the middle of 1888, when a description of them appeared in a *naval and military periodical*! Mr. Jones then goes to the Continent, and, *mirabile dictu*! refers to a work published in Germany in 1888 as evidence that I borrowed my ideas also from foreign veterinarians. It does not appear, however, that Mr. Jones could have read, perhaps he has not even seen, this work, or he would surely never have misled the meeting by inferring that I had been influenced by it in this business. If he had seen the book, then he ought in fairness to have stated that it was published last July (the author dates his preface in June). Professor Möller kindly sent me a copy immediately after publication, and I received it at the commencement of August. I had previously heard that he was attempting the cure of Roaring by lateral operation, and this is mentioned in Mr. Smith's article on the subject in the July number of the Journal. So much for the reference to Möller, from which the other information Mr. Jones laid before the meeting is derived, though it is incorrect. No one in France has ever operated or described an operation for Roaring, and no one of the name of Gouband has ever appeared as a veterinary surgeon in that country. Mr. Jones has copied the blunders of others. He ought to have gone to the originals.

Mr. Jones is reported to have said that he did not believe "they yet thoroughly knew the physiology of the larynx;" and if he spoke for himself only, he might have added the anatomy of that organ. Not long ago, at a meeting, he asserted that the vocal cords were composed of white fibrous tissue; and on July 12th last, after paying me a visit (I think in June) to learn something of the subject, he writes, "I have dissected, since I saw you, many larynx, and I find that the *arytenoid* muscles on *right side* cannot elevate the *left arytenoid* cartilage, even when it is liberated by taking off its lower alæ (or wing). I have examined a horse's larynx to-day, killed this morning, that was a roarer, and both the vocal cords are very healthy; the left does not seem to be *relaxed* in the slightest degree. The *arytenoid* muscles on left side more than partly absorbed." I do not make this reference to Mr. Jones's anatomical, physiological, and pathological knowledge in a captious spirit, but merely to show how suddenly he has become so learned in the matter as to feel himself in a position to criticise, and attribute unworthy motives to, those who have studied the subject for as many years, perhaps, as he has weeks. I observe that he did not mention the result of his own operations. He ought to have done so. His remarks on the administration of anæsthetics read rather Rip Van Winkle-ish and startling, in the light of recent experience; no doubt we shall presently hear something of his having known all about it long ago.

I need not add that I warmly and indignantly repudiate the charge that I have attempted to obtain credit on false pretences. The charge is only made by those who are moved by ignorance, spite, and jealousy, or who are dying of mortification because they have been forestalled in independent work which has been going on for years, whereas they have only been at it a few months. All this I could hitherto afford to treat with the contempt it deserves, especially knowing the quarter whence it emanated. It would be an evil day for veterinary progress if such persons could influence or discourage those who

have its interests most at heart, or if they were accepted in any way as representing the profession, except in its least attractive aspects.

I think I can fairly lay claim to having been certainly the first, in this country at least, to draw serious attention to the necessity for attempting to remove the immediate cause of Roaring by intra-laryngeal operation, and to have given to the attempt all the care, encouragement, and energy I can command. Detractors and calumniators would have it appear that I am working from selfish and dishonest motives. That I shall leave to the judgment of the honourable colleagues who form, thank Heaven! a very much more considerable and influential portion of the profession than the badly-disposed individuals alluded to, and I think I may anticipate their verdict. GEORGE FLEMING.

Proceedings of Veterinary Medical Societies, &c.

THE VETERINARY MEDICAL ASSOCIATION OF IRELAND.

A MEETING of the Veterinary Medical Association of Ireland was held at the Gresham Hotel, Sackville Street, Dublin, on December 27th, 1888. President, Mr. Chas. Steel, F.R.C.V.S., A.V.D.; Hon. Secretary, Mr. J. McKenny, M.R.C.V.S. A large number of members was present.

Mr. B. L. GLOVER read the following paper on

MACHINE-MADE HORSE-SHOES AND NAILS; THEIR SUITABILITY OR OTHERWISE.

MR. PRESIDENT AND GENTLEMEN,—The subject I have chosen to bring before you this evening for consideration is one belonging to the horse-shoeing art; and though, perhaps, not a very scientific one, or one that will result in a prolonged or elaborate discussion, still I hope it will lead to an interchange of some useful ideas.

I have designated my subject "Machine-made Horse-shoes and Nails; their Suitability or Otherwise," and I cannot find that a similar subject has ever been introduced or discussed by any other Veterinary Association.

In these days of machinery it would indeed have been surprising were the shoeing of horses to remain altogether a handicraft; and I venture to state that of all the innovations which have from time to time taken place in horse-shoeing, none can approach in importance the manufacture by machinery of suitable horse-shoes. By this introduction a great change, economical and otherwise, will, I think, take place in the system of shoeing horses; and although I would be sorry to state it as my opinion that horses belonging to the aristocracy, and which are generally kept for show or pleasure, will, in the immediate future, be found universally shod with machine-made shoes, still I am so favourably impressed with the system that I can quite understand not many years elapsing before the "work-a-day horse," be it brewer's, tramway, 'bus, or hackney, will be generally found shod with them.

In the army the adoption of machine-made shoes has taken place after a lengthy and elaborate test, and in accordance with a recent order, three-fourths of the cavalry horses at home are to be shod with them.

Having made these few preliminary remarks, I will now proceed to the immediate subject of my paper. So far as I can gather, the machine-made shoe had its origin in America. It was introduced into and patented in this country by one of the firm of American manufacturers, and from its introduction has resulted the English Company, known as "The United Horse-shoe and Nail Company, Limited."

The shoes manufactured by this Company are described as "patented steam-

hammered horse-shoes"; and, owing to a particular process of preparing the iron, it is claimed that they are more durable than the shoes in ordinary use. This alone would mean economy; but when it is known that a set of ordinary sized shoes costs considerably under a shilling, the saving of expense can be better understood. The shoes are of different sizes and shapes, and they vary according to the description of horse for which they may be required, such as saddle, carriage, tramcar, cart-horse, and even for hunters. Very many large companies, such as railway, tram and 'bus, have taken them into general use in England; and there appears to be an increasing demand for them at home and abroad, a fact which I think goes far to prove their suitability.

My own experience, however, is altogether confined to the machine shoe as adopted in the army, and which is obtained from "The United Horse-shoe and Nail Co." It is known as the "Seeley" pattern shoe, and can be described as a "concave fullered shoe," perfectly flat on the foot surface.*

In the ordinary sized shoes there are six nail holes, whilst the larger sizes have eight. The shoes are numbered in sizes from "one" to "seven," and within this range they are calculated, with slight alterations, and this in a cold state, to fit and suit all horses with normally shaped feet. The shoes are applied on the "cold-shoeing" system, which means that a forge can be dispensed with—an incalculable advantage—more particularly in connection with the shoeing of army horses. The introduction into the service of machine-made shoes, and the cold-shoeing system in connection with them, has been successful, and I have no doubt but the change is a permanent one.

Opinions, no doubt, vary somewhat, but I believe a large majority of the army veterinary surgeons who have had experience of the machine-made shoes, and of the system introduced with them, report favourably on the matter. Indeed, one veterinary surgeon, at present in charge of a cavalry regiment, told me not long ago that he considered the machine-made shoe in every way preferable to the ordinary hand-made one; and I may mention that his experiments went so far as to have on the same horse one fore and one hind foot shod with hand-made shoes, and the other two feet shod with machine-made shoes, the result being that the machine-made shoes proved the best wearers, and in other ways more satisfactory. My own experience of machine-made shoes enables me to speak well of them, and to recommend their being used; but I am of opinion that at present the manufacture of them is not as perfect as it might be.

The cold-shoeing system now carried on in the service in connection with machine-made shoes has now proved successful, and the cases of lameness which have come under my notice, resulting from the use of the machine-made shoe and cold-shoeing system, have been very few. I may mention that I have always been an advocate for cold shoeing, more especially for horses working on roads. For hunters and racehorses I would perhaps prefer hot fitting, for by this means you get closer contact, and therefore less liability of the shoes being pulled off in soft ground.

From what I have said, you will therefore gather that I approve of the cold-shoeing system of applying the machine-made shoe, and I believe it to be the correct system on which to shoe horses that are required for ordinary work.

A few remarks on machine-made nails will bring my paper to a close. They are also an important innovation, and they will no doubt in time entirely supplant the hand-made article. As with the machine-made shoes, the nails are not as yet perfect. I have had experience with several brands, and I find the same fault in them all. The shank is, as a rule, too broad and

* This is a mistake. The Seeley shoe had a thick toe and thin heels. The present army shoe was devised by the P.V.S.—ED. V. J.

too thin. It is to the former defect that I attribute the tendency for machine-made nails to split the horn, and owing to the thinness of the shank they are difficult to drive, and particularly so for a learner; for if the nail is not struck very true, it generally bends. The thinness of the shank also, I think, gives a weak clench, and I have noticed a great tendency for the clenches of the machine-made nails to rise. I would certainly prefer the shanks being narrower and thicker, in fact, more the shape of the shank of the ordinary hand-made nails. For shelly or broken feet, when a nicety is required to drive the nails where they will best hold, and where a peculiarity of pointing or bending of a nail may be required, I find machine-made nails do not answer as well as the ordinary hand-made ones. They are, in my opinion, not rigid enough, and I think narrowing the shank and giving it the thickness would be a decided improvement. Notwithstanding the faults I see in the machine-made nail, my experience of them has proved, on the whole, satisfactory, and I have seldom seen a shoe that had been put on with them come off.

Before concluding, I would wish it to be understood that I am not writing in praise or otherwise of the machine-made shoe or nail as manufactured by any particular company; but I am rather advocating a system of shoeing horses with suitable machine-made horse-shoes and nails on the cold-shoeing principle.

Such, gentlemen, is the subject I this evening introduce for discussion. Of the suitability of machine-made horse-shoes and nails I personally have no doubt, and I am certain that as improvement in manufacture takes place, so will they come into general use. Their economy, efficacy, and application without the aid of a forge, must in time cause them to be generally adopted, and the value of their introduction into the army can only be fully understood by those who have experienced the difficulty that often exists of keeping horses shod up on field service.

An animated and highly interesting discussion was carried on by Messrs. Steel, Glover, McKenny, Lambert, Allen, Pickwell, Lawlor, and Braddell, resulting in a general advocacy of machine-made nails, especially those of the brands known as the "Lion" and "Newmarket."

Relative to the machine-made shoes, the general opinion was that they were imperfect.

Mr. McKENNY submitted an invention of his, an "Anti-windsucker Bit," which the members highly approved of.

After dinner the discussion on Mr. Glover's paper was resumed.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

At meetings of the Board of Examiners held in Edinburgh and Glasgow on and between December 13th and 18th, 1888, the following gentlemen passed the Oral and Practical sections of the final examination, and were admitted Members of the Royal College of Veterinary Surgeons:—

New Veterinary College.

Mr. T. M. Inglis	Portobello, Edinburgh
„ W. Kidd	Lochee, Forfarshire.
„ S. M. Yardley	Wolverhampton.
„ E. Learoyd	Edinburgh.
„ J. Garland	Newburgh, Fifeshire.
„ J. Appleyard	Halifax.
„ H. R. Love	Linlithgow.
„ C. A. Szarbinowski ..	Manchester.
„ E. Wilkinson	Manchester.
„ H. McKee	Kirkcubbin, Co. Down.
„ F. W. S. Clough	Halifax.

Dick Veterinary College.

Mr. W. D. Hodge	..	..	Plymouth.
„ W. Henderson	..	..	Inniscarron, Co. Cork.
„ J. F. Sheehy..	..	..	Limerick.
„ F. Kidd	..	..	Carlow.
„ G. Parr	..	..	Liberton, Edinburgh.
„ W. Braes	..	..	Linlithgow.
„ E. P. Mullan	..	..	Dublin.
„ J. D. McGregor	..	..	Edinburgh.
„ A. C. Hamilton	..	..	Ballyshannon, Co. Donegal.
„ J. R. Farrar	..	..	Southport.
„ A. B. Bennett	..	..	Edinburgh.

Glasgow Veterinary College.

Mr. W. Robb, G.C.	..	..	Glasgow.
„ H. Munro	..	..	Fearn, Ross-shire.
„ A. E. McConnell	..	..	Londonderry.
„ J. L. Orr	..	..	Knockahollet, Belfast.
„ M. J. Stevenson	..	..	Dublin.

The following passed their Second Examination :—

New Veterinary College.

Mr. R. Eastwood.	Mr. E. K. Barton.
„ M. A. Cassidy.	„ J. Halliwell.
„ T. S. Snarry.	„ A. W. H. Dows.

Dick Veterinary College.

Mr. W. H. McArthur.	Mr. G. H. Yates.
„ A. J. Robertson.	„ W. B. West.
„ T. D. Hughes, G.C.	„ C. Byner.
„ A. Johnstone, V.G.C.	„ P. A. McDonald.
„ W. Sherriff.	„ J. E. S. Clarke.
„ L. H. Fairer.	„ C. E. Gray, V.G.C.
„ T. Aiken.	„ W. A. Potts.

Glasgow Veterinary College.

Mr. W. H. Wilkinson.	Mr. T. B. Muter.
„ R. Crawford.	„ B. Ferrie.
„ A. Campbell.	„ T. H. Griffin, G.C.
„ H. J. Potts.	„ J. Kinnear.

The following passed their First Examination :—

New Veterinary College.

Mr. A. Macgregor.	Mr. J. Brand.
„ J. M. Maxwell.	„ H. E. Richardson, G.C.
„ J. Norbury.	„ P. O'Hanlon.
„ A. J. Dalgleish, G.C.	„ W. Litt.
„ C. Leghorn.	

Dick Veterinary College.

Mr. J. W. Nolan.	Mr. G. Best.
„ C. J. Carrick, G.C.	„ G. Jarrett.
„ J. T. Boase, G.C.	„ R. Foreman, G.C.
„ A. C. Gray.	H. S. Clark.
„ W. Cureton.	T. Condon.

Glasgow Veterinary College.

Mr. A. J. Milligan, G.C.

„ A. Campbell.

„ S. Martin.

„ J. Daly.

„ J. Meikel.

Mr. A. Greenhill.

„ F. Leunon.

„ R. R. H. Dalgleish, G.C.

„ F. T. Boyle, G.C.

„ A. Hamilton.

At meetings of the Court of Examiners of the Royal College of Veterinary Surgeons held in London on and between December 19th and 21st, 1888, the following students of the Royal Veterinary College passed their Oral and Practical Examination, and were admitted members of the profession.

Mr. E. Ainsley	Edmonton Green, Middlesex.
† Capt. P. A. Morshead	
† Mr. J. T. Firr	
„ E. Prentice	Royal Veterinary College, Camden Town.
„ C. H. Millman	Launceston, Cornwall.
„ S. T. Groome	Ranelagh Road, Dublin.
„ R. Polglase	Epping, Essex.
„ F. Matthews	Newland, Northampton.
„ H. Scarlett	Stoke Newington, S.E.
„ R. S. Pethick	Norley House, Plymouth, Devon.
* „ J. B. A. Hare	Deerpark, Cashel, Co. Tipperary.
„ F. Thompson	Harrowgate.
„ R. L. Crauford	Dartmouth, S. Devon.
„ F. J. Tucker	Abergavenny, Monmouthshire.
„ J. A. Fryer	Liverpool.

The following students passed their second examination.

Mr. J. D. Hunt.	Mr. J. J. Brown.
„ C. De Cleverton.	„ E. K. Edwards.
„ B. Nettleship.	„ B. P. Boyle.
„ W. G. Brown.	„ J. F. B. Moody.
„ M. Jacobs.	„ W. C. Quinnell.
„ J. H. Hulseberg.	„ T. Stevens.
„ A. E. Roberts.	„ H. H. Hide.
„ H. J. Farnham.	„ P. W. Creagh.
„ H. P. Turnbull.	„ A. Perkins.

The following students passed their first examination.

* Mr. F. W. P. Worsnop.	† Mr. P. Easte.
„ C. W. Howard.	„ J. Limbrick.
„ W. S. Harding.	* „ T. W. Garnett.
„ J. R. Roberts.	„ W. W. Scales.
* „ R. C. Taylor.	* „ S. H. Skelton.
„ T. F. Prime.	„ T. W. W. Hindle.
„ H. B. Parsons.	„ H. W. Leech.
„ P. Perkins.	„ H. Truman.
„ W. A. Stanway.	„ P. Wilks.

Mr. A. Hawes.

Marked thus * passed great credit.

Marked thus † passed very great credit.

† These have not yet complied with the requirements of the College.

R. RUTHERFORD, F.R.C.V.S.,
Secretary, Board of Examiners.

National Benevolent and Mutual Benefit Society. 119

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL
DEFENCE SOCIETY.

THE VETERINARY MUTUAL DEFENCE FINANCIAL STATEMENT.

From January 1st to December 31st, 1888.

CASH RECEIVED.					£	s.	d.
1888.							
Balance in Bank,	January	1st,					
1888	...	...	...	...	387	16	4
Subscriptions for	1888	...	...		52	9	6
Bank Interest,	June	and	De-				
cember	...	...	...		5	7	9
					<hr/>		
					£445	13	7

CASH PAID.				£	s.	d.
1888.						
Mrs. Rusball, entered in wrong						
Bank Book	5	0	0			
Secretary's expenses	1	5	6			
Treasurer's expenses	1	5				
Dec. 31, Cash in Bank	427	6				
Cash in hand since paid into Bank	10	16	0			
				£445	13	7

Audited and found correct.

JNO. B. WOLSTENHOLME.

January 11th, 1889.

THOMAS GREAVES, *Hon. Treasurer.*

THE NATIONAL VETERINARY BENEVOLENT FINANCIAL STATEMENT,

From January 1st to December 31st, 1888.

CASH RECEIVED.			
1888.		£	s. d.
Balance in Bank, Jan. 1st, 1888		309	5 5
Cash in Mersey Docks	1,900	0	0
Cash from Scottish Metropolitan Veterinary Medical Society ...		20	0 0
Thomas Proctor		2	2 0
Dividends from Mersey Docks...		73	3 2
Bank Interest		5	10 10
		<hr/>	
		£2,310	1 5

CASH PAID.			
	£	s.	d.
1888.			
Mrs. Rushall, three payments ...	15	0	0
Cash in Bank	395	1	5
Cash in Mersey Docks	1,900	0	0
Year's expenses	0	0	0
	<hr/>		
	£2,310	1	5

Audited and found correct,

INO. B. WOLSTENHOLME.

January 11th, 1889.

THOMAS GREAVES, *Hon. Treasurer.*

LIST OF SUBSCRIPTIONS TO THE NATIONAL VETERINARY BENEVOLENT AND DEFENCE FUND.

1888.			£	s.	d.
Jan.	2.	J. C. James ...	...	0	10 6
„	2.	E. Faulkner	...	0	10 6
„	2.	G. A. A. Oliver	...	0	10 6
„	2.	J. Rowe ...	...	0	10 6
„	2.	John Freeman	...	0	10 6
„	2.	R. Cartwright	...	0	10 6
„	2.	B. Cartledge	...	0	10 6
„	2.	Wm. Broughton	...	0	10 6
„	2.	J. Markham...	...	0	10 6
„	2.	R. Friggat ...	...	0	10 6
„	2.	W. Whittle ...	...	0	10 6
„	2.	B. J. Russell	...	0	10 6
„	4.	F. G. Samson	...	0	10 6
„	4.	G. Rugg ...	...	0	10 6
„	4.	R. Reynolds...	...	0	10 6
„	4.	W. Carless ...	...	0	10 6
„	4.	G. Newsom...	...	0	10 6
„	4.	S. Lock ..	...	0	10 6
„	4.	C. Sheather ...	...	0	10 6
„	7.	J. D. Overed	...	0	10 6

1888.			£	s.	d.
Jan.	7.	Hy. Thompson	...	0	10 6
„	9.	W. Bowers ...	...	1	1 0
„	9.	R. C. Edwards	...	0	10 6
„	9.	W. F. Peacock	...	0	10 6
„	11.	W. Hy. Webb	...	0	10 6
„	11.	E. Nuttall ...	...	0	10 6
„	11.	F. Danby ...	...	0	10 6
„	11.	Wolstenholme	...	0	10 6
„	13.	F. W. Wragg	...	0	10 6
„	13.	F. T. Stanley	...	0	10 6
„	13.	J. Ball ...	...	0	10 6
„	13.	H. J. Goodall	...	0	10 6
„	13.	T. Walley ...	...	0	10 6
„	13.	T. E. Augers	...	0	10 6
„	14.	G. Banham ...	...	0	10 6
„	14.	T. Collins ...	...	0	10 6
„	14.	E. Beddard ...	...	0	10 6
„	14.	M. Storrar ...	...	0	10 6
„	14.	T. W. Broad	...	0	10 6
„	14.	G. Ball and Son	...	1	1 0

£74 II 6

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary General Meeting of the above Society was held at the First Avenue Hotel on January 10th. Mr. Alfred Broad, the President, occupied the chair, and there were present Professor Axe, Messrs. Burrell, Caton, W. H. Farrow, Gostling, Stanford Harrison, Herron, Hunting, Hurndall, Moore, Mulvey, Oatway, Raymond, Reid, Rogers, Rogerson, Roots, Row, Samson, Shaw, Singleton, Simpson, Slocock, Springett, Willis, Woodger, Wragg, Wright, and the Secretary, and Messrs. Duck and Evans, A.V.D., and Messrs. A. Smith and O. Walpole were present as visitors.

The minutes of the previous meeting were taken as read. The Secretary announced that he had received letters of apology for non-attendance from Professor Walley, Mr. William Lewis and Mr. S. M. Wilson, A.V.D., he also read a letter from the Secretary of the Charity Organisation Society, having reference to the distressed condition of an aged member of the profession.

Mr. F. W. Kendall of Hitchin, Mr. Herbert Springett of Sydenham, Mr. S. M. Wilson, A.V.D., and Mr. William Lewis of Barnet, were unanimously elected Fellows of the Society.

Mr. HURNDALL exhibited the hocks of two horses, and pointed-out the morbid process which had been going on; this condition supervened on injuries received.

Mr. HERRON exhibited a portion of the liver of a horse which was a mass of Echinococcus-cysts, the whole organ having been similarly infested; unfortunately, there was no history of the animal whilst alive. The specimen was received with marked interest.

Professor AXE then addressed the meeting upon "Laryngo-tracheotomy in relation to Roaring;" his very interesting and instructive lecture was exemplified by a number of beautifully prepared specimens. The Professor also demonstrated his method of operating, by performing it on a recently removed larynx and trachea.

LARYNGO-TRACHEOTOMY IN RELATION TO ROARING.

The operation of laryngo-tracheotomy is one to which I have no higher claims than to be a student, seeking to develop the high and important purposes for which it has been designed. The idea of profiting by that which one gives away cannot be said to apply solely to material things, but has, I believe, equal force and truth in respect to intellectual attainments.

When, therefore, *I ask* you to favour me with your attention for a brief period, it is with the object of laying before you my recent small experiences of an operation, which I believe to be one not only of present interest, but likewise of great future benefit to our animal population. In return, I hope that the ideas and methods to be enunciated will receive your careful thought and unsparing criticism, so that the little information I may impart may yield a fair return of wholesome correction and advice.

Hitherto laryngology, like many other departments of veterinary medicine, has only received a very general consideration from English veterinarians; and it must, moreover, be admitted that we have been unpardonably slow to follow the lead of our Continental brethren, notwithstanding that for some time much attention has been given to it in its surgical aspect by the light and leading of our profession abroad.

I accept it as a serious reflection on our craft that, with so much to call forth the most lively enterprise in this department of veterinary surgery, we should have failed to recognise the possible advantages of an operation which strikes at the most serious of the many ailments which afflict our horse population.

Roaring has from time immemorial been the bane of our best and most valuable studs. Thousands of horses are yearly condemned to the cab-yard and the knackers while still young and vigorous, crippled by a local paralysis of the most limited extent. It is very true that importance of pathological changes cannot be measured by their extent, but must for the most part be estimated by their seat and nature.

A trifling organic change in one organ may prove fatal, while in another less important to life such change would not even awaken consciousness of its existence.

In the malady under consideration, we have to deal with the displacement of certain passive constituents of the larynx, viz., the arytenoid cartilage and vocal ligament, which, in consequence of left recurrent paralysis, have been deprived of that support and control which render them amenable to the function of normal respiration.

As the result of muscular disability, the cartilage and cord, as shown in this specimen, has suffered downward and inward displacement, by which the glottal opening is diminished and a free ingress of air prevented. It is to this alteration in the relation of parts that the disease "Roaring" is unquestionably due. At present no satisfactory explanation has been given as to the precise origin and seat of the mischief by which the nervous mechanism of the larynx becomes disturbed; and notwithstanding all that has been said and written upon the subject of the etiology of Roaring, we have not so much as a plausible theory to offer as to whether the nerve lesion is central, peripheral, or reflex.

In this condition, then, we are not in a position to exercise that first principle of therapeutics which directs us to remove the cause, but are left with the naked alternative of dealing with the mechanical effect by the displaced arytenoid cartilage and relaxed vocal cord.

Under these circumstances, we are driven to the surgical device of removing parts which have become not only useless, but obstructive.

It might be supposed a fitting prelude to this paper, had I attempted to

enlighten you on points which have been so much canvassed of late, in regard to the priority of claim to laryngeal section, and the evolution of the operation of laryngo-tracheotomy. I do not, however, propose to attempt a solution of these questions, but leave them to be adjusted by those impulsive advocates of the rights of discovery, who, in disputing the claims of others, have diverted attention from the practical application and utility of the operation, which I hope and think mark one of the most important epochs in veterinary surgery.

The deplorable impatience which some members of our profession have shown in calling for results while inquiry is still being carried on, and the expressions of doubt and discouragement which have been cast at the workers and the work in this new field of research is, to say the least, ungenerous, and indicates, if anything, a want of scientific spirit, and an utter disregard of that sense of responsibility which attaches to the exposition of new methods and new doctrines in medical and surgical practice.

Like all other operations, that of which we are about to speak would seem to have grown out of the minds of many men, and useful as it may prove to be in its present form, it may still be but the beginning of a more complete success; for we can hardly believe that the resources of science, mechanical genius, and surgical device have yet been exhausted upon it, and it is quite likely that the operation of to-day will be voted a clumsy dismemberment and mutilation to-morrow.

We have already seen the abandonment of one method, which I shall presently refer to, and the substitution of another; and with improving light, more highly tutored hands, and more perfect appliances, modification and improvement may at least be expected.

If we do not know to whom the honour of having first practised laryngeal section for Roaring is due, and who devised the various methods which from time to time have been put forth, there can be no doubt as to whom we are mainly indebted for all the good that may accrue from it. Dr. Fleming has unquestionably, by the extent of his experiments and observations, afforded us the most satisfactory evidence of the value of the operation we are about to describe, and to him is deservedly due the credit of having forced it under the notice of the profession.

No less, he informs us, than seventy cases have been operated upon under his superintendence, and he ventures to anticipate that 90 per cent. will be rendered permanently "cured." Should these predictions be realised, the veterinary profession will be the means of redeeming, from a state of comparative uselessness to utility, a large percentage of the working horse stock of the country, and placing to the public credit in money and labour a sum which I will not venture to estimate.

Turning to the practical consideration of laryngo-tracheotomy, it has to be remembered that its value and importance, as a remedial measure, does not cease with its application to "roaring."

All of us can call to mind cases of laryngeal disease which, in the past, were sacrificed for want of the light now afforded us by recent experiences of laryngo-tracheotomy.

This part of the organism, so long regarded as the divinity of surgical intolerance, has proved itself a veritable playground for the scientific laryngologist.

To the student of laryngology, a fine field has been laid open for surgical enterprise; and it is certain that ere long many of those tumours, deformities, and ulcers, once necessarily fatal, will be deprived of their victims, and become the sport of our craft.

The operation as at first recommended by Dr. Fleming, consisted in the removal of the vocal ligament, and with it the vocal angle of the arytenoid cartilage. This suggestion was based upon the idea that the relaxed state of the former

permitted the air during inspiration to enter the ventricle, and to force the cord inward so as to encroach upon and diminish the laryngeal orifice so far as to occasion the abnormal sound referred to in the term "roaring." I have had opportunities of putting this mode of procedure to the test of experiment, and although, from a surgical point of view, the operation was perfectly satisfactory; as a curative measure, it afforded no relief to the subjects operated upon. The same unfavourable result was obtained in the two cases treated by Professor Smith at Newcastle during the annual meeting of the Veterinary Association.

Having failed in the course adopted, it was suggested to me by Dr. Fleming that the whole of the cartilage with the cartilage of Santorini should be extirpated, and with these I also include the vocal ligament. It is this operation which has yielded such definite results in the hands of Dr. Fleming, and such promising experiences in my own.

Mode of Operating.—Notwithstanding the nature of the operation and the importance of the part to be dealt with, it is not found necessary to submit the patient to any preparatory treatment. My small experience, however, has seemed to suggest that horses in good working condition recover more quickly, and are less liable to irregularities of reparation, than others in a less vigorous state of health. There appears in the latter to be a tendency to exuberance of granulation, and a corresponding want of development and maturation in the reparative tissue. Such cases lead to the necessity for repeated cauterization and excision of fungous overgrowth, and to possible interference with the success of the operation.

Subject, or course, to the larger experience of others, I think, in dealing with valuable hunters it would be desirable, as it would be also convenient to owners, to select, as far as practicable, the close of the hunting season as the time when the most favourable results might be expected.

Instruments and Appliances.—The instruments which I have employed in laryngo-tracheotomy are before you, and consist of (1) an ordinary scalpel; (2) a pair of spreaders; (3) a tampon-cannula; (4) a short-bladed scalpel, having the blade set somewhat at right angles with the handle, as devised by Mr. Raymond; (5) a narrow lancet-pointed scalpel; (6) a probe-pointed knife laterally curved, and (7) a pair of Vulsellum forceps. A plentiful supply of antiseptic solution, and three small sponges, with chloroform inhaler, completes the surgical appliances.

In proceeding to the operation, the horse is first placed under the influence of chloroform. The legs are then drawn upward so that the animal is brought to rest upon the back. Trusses of straw are now placed on either side to steady the body, and the dorsal extremity of the neck is raised by means of a pad, to give the head an inclination downward; the object being to favour the flow of blood towards the mouth.

The head is now well extended and the throat fully exposed. The operator, kneeling on the left of the patient, feels for the body of the thyroid cartilage, as forming one extremity of the cutaneous section, and the second or third tracheal ring which will limit the other.*

The first incision is carried through the common integument, along the mesial line of the neck, to be at once followed by the second, which separates the subscapulo-hyoidea muscles from each other. The larynx and first three tracheal rings are now fully exposed.

At this stage of the operation, some little escape of blood will have taken place from the divided vessels. Here a moment or two may be devoted to its removal, and the application of the cold sponge to arrest further hæmorrhage, before opening the larynx. This done, the point of the scalpel, with

* Mr. Raymond, after a large experience, deems it sufficient to cut through the crico-thyroid ligament, the cricoid-cartilage, and the crico-tracheal membrane.

its cutting edge directed backward, is thrust into the crico-thyroid ligament, immediately in front of the cricoid ring, from which point the section is carried on through the first two or three tracheal cartilages.

The edge of the knife is then turned in the opposite direction, and with the point the division of the cricoid ligament is carefully completed as far as the *pomum Adami*.

The introduction of the knife near to the cricoid ring is recommended, in order to obviate the risk of wounding the right vocal ligament during the expiratory movement when it is forced inward towards the middle line of the larynx. At this point the tampon-cannula is introduced into the trachea, and tied round the neck by means of tapes. The little india-rubber sac is now inflated with air, so as to fill up the passage and prevent the blood from going in the direction of the lungs.

The edges of the superficial and deep wounds are now seized by the spreaders, and drawn forcibly apart by assistants. An opportunity is here afforded of inspecting the vocal ligament, which should always be done with a view to determine if the roaring is due to left recurrent paralysis, or to some extra-laryngeal cause.

In the former case, the vocal ligament of the affected side will be found stationary or passive, while the right one will be noticed freely moving with each inspiratory and expiratory effort.

Where movement is observed on both sides, comparison must be made as to the relative freedom and extent of action. And if in these respects they are equal, left recurrent paralysis would be contra-indicated. On the other hand, should the mobility of the left ligament be restricted and its movement tardy, the operation may be proceeded with.

Here the index finger of the left hand is inserted into the left ventricle, and the vocal ligament drawn towards the centre of the larynx. While thus stretched, an incision is made across its thyroid attachment, taking care not to cut through the posterior constrictor muscle which lies immediately beneath it.

By the means of a pair of *Vulsellum* forceps, the divided ligament is then seized and a little traction made upon it, while with the rectangular knife the mucous membrane is divided along its posterior border, and the section then continued downward in the edge of the arytenoid cartilage, as far as the posterior or articular angle. The posterior constrictor is now dissected away from the arytenoid, and the cartilage pulled gently upward with the *Vulsellum* forceps, and by means of the lancet-pointed scalpel disarticulated from the thyroid.

In performing this part of the operation, a careful light pricking movement is made over the joint with the point of the knife until the capsular membrane is punctured. The knife is then carried round the articular border, with the cutting edge directed towards the joint surface of the arytenoid. By adopting this mode of procedure, the danger of damaging the thyroid is much diminished, and the untoward results of cartilaginous new growth materially obviated.

Having accomplished this, which by the way needs a little practice, the posterior angle of the arytenoid is altogether freed from the cricoid by dividing the two abductor muscles (*crico-arytenoideus posticus* and *lateralis*) at their point of insertion. This is done by passing the probe-pointed bistoury across the articulation, and describing a crescentic movement backward round the muscular tubercle of the arytenoid cartilage.

This done, the dissection is now carried on in a forward direction—separating the anterior constrictor and dividing the *arytæno-epiglottidean* fold. The latter section should be made close to the cartilage of *Santorini*, in order to save the mucous membrane as far as possible.

It only now remains to divide the inter-arytænoid ligament to free the cartilage from its fellow, and this is done by means of curved or rectangular scissors.

Altogether the actual operation occupies about ten minutes, and it need hardly be said that it is greatly expedited and facilitated by the employment of an electric lamp, such as I have here—this is connected with a neat portable battery, and supplies an excellent light; it was supplied by Messrs. Maw and Co. The instruments used in the operation were specially made for me by Messrs. Arnold, and they now supply a battery similar to the one referred to above.

In some instances the hæmorrhage is considerable, and on all occasions free sponging of the interior of the larynx is necessary during the dissection, and one or two small vessels may require to be twisted.

Should the horse rally from the effects of chloroform before the operation is completed as may happen, it must be borne in mind that the re-administration of the anæsthetic cannot be effected through the nostrils, but must be carried on through the cannula, which is now the respiratory outlet.

At the close of the operation, the head should be slightly raised in order that the blood-clot lodged in the fauces and pharynx may escape by the surgical wound; and after the organ has been freely sponged, the dissected surface should be carefully scanned, and any loose shreds of mucous membrane carefully removed. The larynx is now well sprayed with antiseptic solution, and the animal is allowed to rise.

After Treatment.—Twenty-four hours after the operation, the tampon cannula is removed. It is my practice to allow the patient food and water as usual from the time when the operation is completed. No difficulty appears to be experienced in swallowing solids, but a certain quantity of fluid will now and again pass into the trachea, and produce slight paroxysms of coughing when water is given with the head in an elevated position, and when taken from the ground small quantities will flow down the nostrils; but I have not experienced any ill effects from either of these derangements. To guard against food being washed either into one channel or the other, watering the animal before feeding is strictly observed. In cases where marked difficulty of swallowing water occurs, it is good practice to feed largely on carrots for a time, so as to render its use well-nigh unnecessary.

Three or four times each day antiseptic spray is thrown into the larynx, and the external wound is kept scrupulously clean. For the first two or three days a copious flow of mucus is discharged from the orifice in the throat, and later on muco-pus in increasing amount.

About the sixth or seventh day, the horse should be cast and the interior of the larynx inspected by means of the electric light, and this should be repeated again a few days later. Where exuberance of granulation is found to exist, the part must be cauterised and inspected again if deemed necessary.

After the first week, walking exercise for half an hour each day may be allowed, and the period increased as time passes on.

In from four to six weeks, the wound is completely healed, and a little trotting exercise may now be enforced.

It may be pointed out that it is not desirable to submit the horse to severe exertion at this time, for the purpose of testing his wind.

At least ten weeks should be allowed to transpire from the date of the operation before such a step is taken.

This period has not yet been reached by any of the cases upon which I have operated, but I am pleased to say that such trials as some of them have undergone fill me with hope of great success.

Mr. RAYMOND, A.V.D., on the invitation of the President, exhibited and

described the electric light and cautery, and other instruments he had devised for operating on the larynx. He said he had little to add to the lecturer's remarks, who had described the operation pretty much as he (the speaker) had demonstrated it to him. Since then he (Mr. Raymond) had simplified the operation, in so far that instead of the lengthy incision through the thyroid ligament, cricoid cartilage, tracheal ligament, and first three tracheal rings, as recommended by Möller, he found it was an advantage not to cut through the three rings at all. He rather differed from Professor Axe in so far that he did not like to feed and water soon after the operation; he rather preferred to withdraw all food for awhile. He was not in a position to speak from personal knowledge of the percentage of cures or reliefs, because when the wounds were about closed the horses were distributed throughout the country. The Principal Veterinary Surgeon alone could give information on that point.

A good many people who formerly asserted that no operation on the larynx could do any good, and held up those of opposite opinions to contumely, had changed their note, and it was their constant endeavour to make out that there was nothing new in the operation. As a mere operator, he could afford to look on with some amusement. He had shown that, with care, the operation was a safe one, and he imagined that like any other operation, there would be failures and successes. There was very little new under the sun—Pasteur had been preceded by former Pasteurs, Smith's operations were performed formerly by other Smiths; but he would try and get some credit for originality back to England by stating that he had it on very good authority that a veterinary surgeon of the name of Walker, used to operate in 1828-9 on roarsers, in Dublin; he excised "something," but did not recommend the operation. If that be correct, Gunther was anticipated by twenty years.

Professor AXE said he was much obliged to Mr. Raymond for the remarks he had made, and for mentioning some of the minor details which he himself had overlooked; there was no doubt Mr. Raymond had more experience of the operation than any other veterinary surgeon in this country, and he hoped that the remarks which had been made during the evening would stimulate others, especially the members of this society, to pursue the matter still further, so that the operation might be made as efficient and as successful as possible. He felt that there was a great future for the operation, notwithstanding the adverse opinions that had been made respecting it. He thanked those present for the attentive hearing they had given to the few disconnected remarks he had made.

The PRESIDENT then proposed a vote of thanks to Professor Axe and Mr. Raymond, which was heartily carried. A vote of thanks was also, on the motion of Mr. WOODGER, accorded to Messrs. Hurndall and Herron for their morbid specimens.

SIDNEY VILLAR, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held at the Blackfriars Hotel, Manchester, on Wednesday, December 12th. Tea at 5, business at 6.

Present: J. B. Wolstenholme (President), Messrs. Peter and W. A. Taylor, Thomas Greaves, Alex. Lawson, S. Locke, Jas. Ingram, Tedbar Hopkin, and John Moore, all of Manchester; Messrs. R. C. Edwards (Chester), H. Ferguson (Warrington), James Hart (Oldham), J. B. Taylor (Ashton-under-Lyne), James Marshall (Knutsford), W. H. Bridge (Bolton), W. Noar (Bury), W. Arkcoll (Leek); and Messrs. R. S. Reynolds, S. Jackson, W. Welsby, and the Secretary, of Liverpool.

Letters of apology regretting their inability to be present were received

from Professors Williams, McCall, Walley, and Lewis ; Messrs. John Malcolm, E. Faulkner, H. Kidd, J. S. Hurndall, T. Briggs, and R. Hughes.

A letter was read from Mr. R. C. McRaith, stating that having removed to London, he tendered his resignation as a member of the Association.

Mr. R. Hughes, M.R.C.V.S., of Oswestry, was elected a member of the Association.

The PRESIDENT nominated for membership of the Association Mr. Peter Pike, M.R.C.V.S., of Manchester, and Mr. William Noar, M.R.C.V.S., of Bury. Mr. W. W. Bridge also nominated Mr. Jos. Urmson, M.R.C.V.S., of Bolton, for membership of the Association.

The TREASURER then read his annual report.

Proposed by Mr. THOS. GREAVES, seconded by Mr. T. HOPKIN, that all members who were three years in arrears be struck off the books.—Carried unanimously.

Proposed by Mr. T. HOPKIN, seconded by Mr. PETER TAYLOR, that a letter of condolence be sent to the widow of the late Mr. John Lut, of Bolton.—Carried unanimously.

Proposed by Mr. T. HOPKIN, seconded by the PRESIDENT, that Messrs. Sam. Locke and W. A. Taylor be elected auditors.—Carried unanimously.

A very hearty vote of thanks to the retiring office-bearers for their services during the past year was proposed by Mr. PETER TAYLOR, seconded by Mr. THOMAS GREAVES, and put by Mr. ALEX. LAWSON.

The election of office-bearers for the ensuing year then took place.

Proposed by Mr. PETER TAYLOR, seconded by Mr. S. LOCKE, and supported by Mr. W. A. TAYLOR, that Mr. E. Faulkner be elected President.—Carried unanimously.

Proposed by Mr. W. A. TAYLOR, seconded by Mr. PETER TAYLOR, that Mr. R. S. Reynolds be elected a Vice-President.—Carried unanimously.

Proposed by Mr. ALEX. LAWSON, seconded by Mr. PETER TAYLOR, that Mr. James Hart be elected a Vice-President.—Carried unanimously.

Proposed by Mr. THOS. GREAVES, seconded by Mr. PETER TAYLOR, that Mr. Sedbar Hopkin be re-elected Treasurer.—Carried unanimously.

Proposed by Mr. J. B. WOLSTENHOLME, seconded by Mr. ALEX. LAWSON, that Mr. Arthur Leather be re-elected Secretary.—Carried unanimously.

HEREDITARY UNSOUNDNESS IN HORSES.

After some preliminary remarks, Mr. PETER TAYLOR said agricultural societies in England now numbered from eighty to ninety, commanding and distributing large sums of money annually, for the improvement of the horse stock of the nation. They are capable of doing incalculable good not only in improving the physical development, but also in eradicating constitutional weakness, bad conformation, and hereditary disease from our horses. There should be at all exhibitions of agricultural societies three veterinary surgeons, the majority to carry any disputed case. The duties are both onerous and delicate, and to perform them efficiently requires time and great practical knowledge, yet in the short time of half an hour these societies wish one to give an opinion on four, six, or eight horses ; it is not therefore surprising there should be dissatisfaction, disappointment, and loud complaints. The whole arrangements at agricultural and horse shows require immediate alteration. Proper and sufficient time and ample room ought to be found for the professional examination of the exhibits. Professor Axe says it is difficult to estimate the annual loss sustained by breeders and owners of horses from the insidious influence of morbid inheritance ; he infers, from twenty-five years' experience, it is not less than from sixty to sixty-five per cent. ; and the Professor calculates the loss sustained by our breeders and owners to amount to four millions sterling, and the greater portion falls on

the farming class. If at the exhibitions of horses at these eighty or ninety agricultural shows, from the Royal downwards, there be from a thousand to two hundred animals exhibited, the aggregate number must be great. Well might Mr. Jacob Wilson exclaim the time has arrived when the Royal Agricultural Society must recognise its responsibility, and do something to stem the tide of deterioration in our horse supply, which seemed to be annually increasing. Numerically, then, and physically too, this condition of affairs calls aloud to choose an authority to do something whereby the ruinous influence caused by inheritable disease shall be diminished and controlled, if not thoroughly eradicated from our breeding animals; and comprehensive veterinary supervision of all horses intended for stud purposes will do an immense amount of good in stemming the tide of such hereditary disease. It is not my intention to enlarge upon individual diseases before such an enlightened body of professional men, but I will content myself by enumerating those diseases I believe to be hereditary. Mr. Taylor named, in addition to those diseases usually accepted as hereditary, many others which his experience led him to conclude were inheritable, and concluded by saying, I submit this very important and intricate subject to your care and consideration, knowing, as I do, how shallow we are in our boasted wisdom, and that there is no finality in human knowledge, and believing, as I do, the time will come when the why and wherefore of any point in nature will be solved.

Mr. R. S. REYNOLDS: The idea of ascertaining from the veterinary profession what diseases affecting the horse should be considered of hereditary type is probably the natural outcome of differences in professional opinion that have been expressed upon a few notable, and perhaps exceptional cases met with at horse-shows. And no doubt it is wise upon the part of breeders, exhibitors, and show-yard authorities to endeavour to fix upon us the responsibility of scheduling all the hereditary ailments to which horses are liable. I cannot say that the veterinary authorities of Red Lion Square have shown an equal amount of discretion in accepting so readily the grave responsibility. Nor can I view their decision in any other light than as being calculated to prove abortive in result and detrimental to the true interests of the profession. It has been elsewhere pointed out that opinions upon the actual existence of acknowledged hereditary defects have been many times, and will continue to be, causes of dispute between veterinary surgeons of known repute. No doubt that is so, but those differences do not exceed in importance opposing views upon what are to be considered diseases due to hereditary taint, and what are not so attributable. There will certainly be a unanimity of opinion with regard to the classification of a number of diseases, but there are others upon which agreement will be impossible, and any antagonism amongst members of the profession upon such points will be used by interested sections of the outside public to bring ridicule and discredit upon us. Nor are these the only or the greatest difficulties that present themselves. Where is the line of demarcation to be drawn between the existence of hereditary disease and the presence of defective conformation due to congenital and possibly to ancestral causes? To what extent must a disease be developed, and how far must defective conformation exist, before a certificate of soundness is withheld? In what category are curby hocks and weak-heeled, brittle, oyster-shaped feet to be placed? Are horses with round, short, fleshy, weak though technically sound hocks, that can scarcely carry the carcass of a lumbering fat horse, to be passed sound, whilst those with long, bony, ragged, and maybe uneven hocks, that are flexed and extended with freedom and power, and which you know from experience will stand the most severe tests of physical exertion, to be rejected? How, again, is the very commonly met with relaxation of the ligaments of the fetlock joint to be dealt with? Questions such as these may be multiplied almost indefinitely, each one increasing our difficulties.

Mr. PETER TAYLOR has included in his list "Exostoses"! He knows as well as any one here that it is very usual indeed to find amongst highly fed young stock big bony enlargements on the inner side of the shank bones immediately under the knee. It is only two or three years ago, gentlemen, that I first learned that this particular Exostosis was dignified with the name of "Knee Spavin," and on the same occasion I saw a young horse possessing a pair of these excrescences rejected for hereditary unsoundness, on that account, of course. I had previously seen very many animals similarly affected, but neither before then nor since have I seen the least lameness result from their presence, and it is quite exceptional to find them amongst stud animals that have arrived at maturity. It is absurd to suppose that any man will blindly subscribe an edict issuing from the Royal College. To be of practical service in a show-ring, the veterinary referee must determine by his experience and knowledge upon each individual animal brought under his notice; to give an opinion according to prescribed rules, or to be governed by hard and fast lines, will quickly prove him to be unfitted for the duties of his office.

Mr. THOS. GREAVES remarked, I have listened with much pleasure and interest to the reading of Mr. Taylor's paper. It shows that great pains and much anxious thought have been bestowed upon it. I had the pleasure of listening to the one on the subject at the Border Counties, by Mr. Hunting, and I also read the one on the same subject by Mr. Stevenson, read before the North of England Association. The subject has been well ventilated, but there are many matters still beyond our reach. There are one or two aspects of this subject which have not been touched upon, and which I wish to call your attention to. The physiology of heredity; what is its nature? I have pondered over this subject a good deal; it is the highest interest that scientific inquiry can be occupied in, and the view I take of it is this, that it is simply a misnomer to call some of these defects hereditary disease. Many of these defects have not been produced by disease at all—not in the slightest degree; for instance, a foal is born with one hock larger than the other, a decided bony enlargement in the seat of Bone Spavin. Now, I think no one will contend this enlargement is the result of diseased action—that is, inflammation, and exudation of ossific matter. I could instance navicular and other affections as coming under the same category, but to call them disease, or that they are dependent on the same phenomena as tissues produced by real diseased action, to say the least of it, is incorrect. We may call it a malformation, a deformity, an abnormal growth, but we have no right to call it disease, any more than to say that a calf born with two heads or six legs is a result of disease or hereditary disease. The view I take of it is this: Hereditary affections, pure and simple, are certain defects existing in the seed of the sire or dam, and originate in the embryo or foetus at the moment of copulation. *The die is cast then*; it is transmitted, and is irrevocable. It goes on and simply obeys the natural law of development or growth, and in which diseased action has nothing whatever to do. I grant you that there are innumerable instances in which hereditary tendency may lie in the system for months or years in a latent form, such as consumption or scrofula in the human being, and many diseases in our domestic animals. These may exist unobserved until some existing or favourable conditions call them forth, but I contend these cases do not mitigate against my hypothesis. In all these complex and obscure matters we have yet much to learn, and they want much more ventilating and investigating. It is the special and peculiar province of our profession to perform this duty. As far as I can see, many of these so-called hereditary diseases will be traceable to an origin the same as I have sketched out above, and the same as I have elsewhere described certain facts in reference to some cases

of Roaring, but on this subject we want more light and more knowledge. It will all be made clear to us as the mysteries and secrets of nature become better known.

Mr. T. HOPKIN: I agree in a great measure with what Mr. Reynolds has said. To give a list of diseases, and say these only or always are hereditary, would be absurd, and only end in confusion and contempt. Whilst admitting this, there is no doubt in our profession much knowledge that would be of great benefit to the breeder, and that would gladly be given if they desire it. In breeding there is first the double parentage to consider; a defect or unsoundness in one parent may be overcome by progeny taking in a marked manner after the other parent. The treatment of young stock up to a certain age may, and often does, materially interfere with development of unsoundness, to which there may be hereditary tendency. One reason Roaring has increased so much of late is that in racing horses may make a name by their winnings before they arrive at the age Roaring usually develops, and having finished their racing career, they go to the stud and quickly degenerate into roarers, living on the fame acquired before this was developed. Conformation is also an important factor in soundness. An animal may not be actually unsound technically, but his conformation may be such that, if tested by work, would undoubtedly result in unsoundness. To illustrate this, if a horse that in racing or hunting with good-shaped hocks springs a curb you would say he was unsound; but another horse, with bad-shaped, bent hocks, may not have a curb, because he has never galloped or been tested—technically sound, but practically, for breeding, not to be compared with the other. Circumstances: The surroundings and treatment of young stock may be either favourable or unfavourable to the development of hereditary defects, all tending to make it impossible for a hard or fast line to be drawn of hereditary unsoundness. If we take the list as enumerated by Mr. Taylor it would be easy to pick out a large number that are not constantly or even generally transmitted from parent to offspring. There are degrees of unsoundness, some defects rendering animals so thoroughly useless that they should receive no quarter. Amongst these I should place true Ring-bone, Navicular Disease, Roaring, nervous and spinal affections.

Mr. S. LOCKE: Mr. President and Gentlemen,—I don't know that I can say much more on this subject than what has been said. It is one of very great importance to the veterinary surgeon, as also to breeders of stock. I am afraid the Council of the Royal College of Veterinary Surgeons will have a difficult problem to solve in answering properly the questions put to them by the Royal Agricultural Society, and if not careful will, in a manner, stultify themselves by drawing out a hard and fast line between hereditary and non-hereditary disease, as there will in some instances always be differences of opinion. Even now some of us differ very materially with regard to a horse with odd feet. I am decidedly of opinion that a horse with odd feet ought to be rejected. The agricultural societies are in a measure to blame for the uncertainty that exists. Very often the opinion of the veterinary surgeon is not asked; everything depends upon the judges. They ignore the veterinary surgeon, examine the animal, and give their decision without consulting him, thus leading sometimes to law and differences of opinion. There ought to be three veterinary surgeons at shows, their opinion taken as to soundness and hereditary tendency; the majority to rule, and their decision to be final.

Mr. ALEX. LAWSON: I desire to join in thanking Mr. Peter Taylor for his kindness in bringing forward, at such short notice as he has had, such a useful subject, and now occupying so much public attention, as hereditary diseases of horses. At the same time I should like to say a few words as to the position and difficulties veterinary surgeons have to contend with at most of the agricultural shows. The position is considered very secondary to judges,

and in most cases they are kept hanging about in the ring until the horses have been judged, and only in cases of dispute as to soundness is the veterinary surgeon asked for his advice, instead of being called in to examine the prize-winners immediately after the decision of the judges is known. A suitable place for making the examinations ought to be provided; and Ireland leads the way at present, as the committee of the Dublin Show have regularly appointed veterinary surgeons to each class, and provide a good ground for each horse to be run in hand, a box to see the eyes, and a field to test the wind. I think breeders of horses ought to be associated with veterinary surgeons in coming to a definite conclusion as to what are hereditary diseases, as they are more likely to give the facts from their own personal knowledge than most veterinary surgeons have an opportunity of doing. Still, at the same time, great care must be taken, and the evidence well verified, as you will see both breeders and veterinary surgeons differing in their opinion as to actual facts, as to what is sound and unsound. For instance, I have seen a veterinary surgeon condemn a horse for Sidebone, and two others pass him five minutes afterwards. There are about ten diseases which most of us agree are hereditary, and which come mostly before the public, and horses suffering from any one of them ought certainly to be rejected.

Mr. R. C. EDWARDS said it would take too long a time to give an individual opinion on each hereditary disease noticed by the essayist. He cited a sire which had sound hocks; about 70 per cent. of his stock when two or three years old had curbs, and if such animals were only used for harness purposes the curbs would disappear when they were seven or eight years old, but if used for hunting purposes the curbs would become worse, rendering firing and blistering necessary. Roaring was not detected at birth, usually followed cold, or more especially Strangles. Foals, as a rule, were born sound, and it was in after life that the hereditary diseases were developed. A colt at two years old might be perfectly sound, and passed as such, but at three years old might become unsound from hereditary taint, hence a difficulty in detecting hereditary disease in the early period of life. He once examined a cart stallion, aged two years, passed sound. At three years old he had Sidebone. His sire had no Sidebones, but his dam had. To draw a hard and fixed line respecting hereditary diseases, in his opinion, seemed almost impossible.

Mr. W. A. TAYLOR: It is a significant fact, and one for congratulation, that the Royal Agricultural Society should apply to the Royal College of Veterinary Surgeons for assistance in their attempt to deal with the question of hereditary disease in horses intended for stud purposes. With a twenty years' professional experience, and a fairly close study of the question of heredity in other animals besides the horse, I feel some difficulty in arriving at a satisfactory conclusion as to which equine diseases are, and which are not, hereditary. Many more diseases than are usually accepted as hereditary could, if careful record had been kept, I believe, be proved to be so, and to the neglect on the part of many of us to collect and record all facts likely to bear on the subject must be attributed the loss in value of our evidence. It is necessary for the undeniable proof of a disease being hereditary that well-recorded facts, and not tradition, shall be forthcoming. And even then, admitting a carefully tabulated list of hereditary equine diseases, the *crux* will appear when these diseases are sought for by veterinary surgeons. The want of anything like unanimity of opinion as to the presence or absence of a disease has unfortunately led the public to value less highly than they could otherwise have done the opinions of veterinary experts. As a set-off to this, it may be said that at most important exhibitions of horses nowadays it is usual to appoint three veterinary surgeons,

and the opinion of the majority is accepted. Certainly, this is safe so far as it goes, but what do we find at subsequent shows? other veterinary surgeons appointed whose opinions may, and doubtless do, differ from those of their *confrères* at the previous show. Consequently an animal rejected at one show may pass muster at another. To my mind there are malformations of limb far more serious, from a breeder's point of view, than certain hereditary unsoundnesses, and it certainly seems to me that it would be cruel to reject a sire or intended dam for a "well-situated" splint, and to pass one that has sickle-shaped hind legs or curby hocks. I am extremely anxious to learn which hereditary diseases the Council of the Royal Agricultural Society will decide to schedule as constituting disqualifications for prize-taking, and whether or not the question of degree will enter into its decisions. The whole question as it affects the horse-breeding and exhibiting community bristles with difficult problems, and if out of the chaos of evidence laid before the Council of the Royal Agricultural Society that body finds itself equal to a satisfactory solution of the question in all its aspects, which I very much doubt, horse-owners, breeders, exhibitors, and veterinary surgeons alike will own it a debt of gratitude difficult to discharge. My advice to breeders of all stock is to breed from the fittest and soundest *only*, if they desire soundness in the progeny.

Mr. ALEX. LAWSON moved the adjournment of the discussion to the next quarterly meeting.

Proposed by Mr. T. HOPKIN, seconded by Mr. T. FERGUSON, that Messrs. Greaves, Reynolds, W. A. Taylor, Alex. Lawson, S. Locke, and office-bearers form a committee to revise report of discussion.—Carried unanimously.

Proposed by Mr. THOS. GREAVES, seconded by Mr. PETER TAYLOR, that a committee be appointed to inquire into the financial condition of the Association, and that the auditors and office-bearers form the committee.—Carried unanimously.

The usual vote of thanks to the President concluded the meeting.

ARTHUR LEATHER, *Hon. Sec.*

Army Veterinary Department.

Veterinary Surgeons Burt and Davies have arrived in England on sick leave from India. Veterinary Surgeons J. H. Steel, Waddell, and Richardson return to India; and Jackson, Tibaldi, and Drage embark in February for a tour of service in that country.

Obituary.

We deeply regret having to announce the death of William Lamb, M.R.C.V.S., late Inspecting Veterinary Surgeon of the Bombay Army, which occurred at Coonoor, in that Presidency, on October 6th, at the age of fifty-six years. Mr. Lamb was one of the few remaining Veterinary Officers of the defunct East India Company, and retired a short time ago. He was a student of the Dick College, receiving the certificate of the Highland and Agricultural Society in 1850, and becoming a member of the Royal College of Veterinary Surgeons in 1880. An old and cherished friend writes of our deceased colleague: "Mr. Lamb was much beloved by his brother officers of the 3rd Bombay Queen's Own Light Cavalry, in which regiment he saw much service; and on one occasion led a charge of a portion of the regiment during the Indian Mutiny in 1856-57. Of late years he was employed as

Superintendent of the Horse-breeding Department in the Bombay Presidency, and the good work performed by him in that capacity was acknowledged by the Government of Bombay. The profession has lost in Mr. Lamb a scientific veterinarian, and an excellent practitioner." The high esteem in which he was held is also testified to by notices which have appeared in the local press, from among which we select the following from the *Poona Observer* of October 11th: "His many friends at Poona and Bombay will regret to hear of the death, at Milford Lodge, Coonoor, of Inspecting Veterinary Surgeon Lamb on the 6th inst., which is chronicled by the *South of India Observer*. The name of the late Inspecting Veterinary Surgeon William Lamb is well known in this Presidency, where he made himself conspicuous among sportsmen in every phase of field sport. In the saddle over a country, or on the flat, he was a centaur. As a 'pig-sticker' he was famous and foremost. In the tented field he was no less notorious as a soldier, having captured a stand of colours during the charge of his regiment in the Persian war. He was withal modest and retiring; a genial kind friend, full of *bonhomie*, and even when the affliction of loss of sight overtook him, he resignedly accepted his fate like a large-hearted hero."

Alexander Grey, F.R.C.V.S. (1887), died at Leith on the 15th January. Graduating in 1880, Mr. Grey remained attached to his school in Edinburgh (Dick's) for some time as an assistant teacher. Two or three years ago he commenced to practise his profession in Leith, where, we believe, he was achieving success. He was an enthusiastic student of pathology, and an earnest worker.

The following deaths have also occurred:—

W. B. Garner, M.R.C.V.S., St. Ives, Hunts, a graduate of 1868.

Thos. Colley, M.R.C.V.S., Conisborough, Yorks, a graduate of 1871.

J. McCarthy, M.R.C.V.S., Leap, Co., Cork, a graduate of 1880.

Jurisprudence.

AN EXTRAORDINARY CASE.

HASTINGS COUNTY COURT, DECEMBER 17TH, 1888. BEFORE HIS HONOUR JUDGE MARTINEAU.

Woodruffe Hill v. General Patton Bethune was a claim for £4 13s. 6d. for veterinary attendance. There was a counter-claim for £50 for damages in respect to the treatment of a horse.

Mr. F. A. Langham appeared for Professor Hill, and Mr. Lamb (of Brighton) conducted the case of General Bethune.

On the application of Mr. Lamb, witnesses were ordered out of court. Great interest seemed to be taken in the case, a large number of ladies and gentlemen from St. Leonards being accommodated with seats in the gallery and other parts of the court.

Mr. Langham, in opening the case, said this was an action brought by Mr. Woodruffe Hill against General Patton Bethune for £4 13s. 6d. for attendance as veterinary surgeon, visits, and other things, to certain dogs and horses belonging to the General. The case, as far as plaintiff's case was concerned, was a simple, ordinary one, but the defendant had pleaded a counter-claim, by which he sought to recover £50 damages for injuries sustained by reason of plaintiff's alleged ill-treatment of a horse which he was called upon to attend.

The amount of the claim in dispute was reduced by striking out amounts which were agreed upon.

After a little skirmish between Mr. Langham and Mr. Lamb, all witnesses were ordered out of court.

Mr. Langham then proceeded with his opening statement.

John Woodruffe Hill, F.R.C.V.S., veterinary surgeon of twenty years' practice, and late Professor of the Downton College of Agriculture, said he had very considerable experience with regard to the treatment of animals. On December 11th he was sent for, to see a horse belonging to General Bethune, which was at Skinner's Mews. He went there, and saw the animal in question. It had an attack of Aphthæ or Thrush of the mouth, the upper lip being affected. There was a collection of small vesicles in the mouth, and it was a simple case, a gargle being used as the remedy. There was no necessity for any further examination. He was again sent for on the 14th, for the express purpose of rasping the same horse's teeth, the messenger stating the operation had been recommended by Mr. Watney, a friend of the General's, and that unless he (witness) could go at once, another veterinary surgeon would be called in. He went immediately on receiving such an urgent message from the General, taking his rasp with him. The horse was in the same stable, and he found that the teeth were uneven. General Bethune's groom was present. At this date the horse had quite recovered from the Aphthæ. He felt the horse's teeth from the outside through the muscles of the cheek, and remarked that there was nothing extraordinary about their condition, and he also said he couldn't operate single-handed, and the groom went out and brought back a strange man, and commenced to put a twitch on him. Witness objected, but he said if he did not the animal would knock witness's brain's out with one of his fore-feet. The twitch remained on, and the strange man, at witness's request, held the animal's head on the off side. Witness commenced on the teeth in the upper jaw, and when he had done that he turned round to wet his rasp in a pail of water. He had not turned his back a moment when the man exclaimed, "Good God! look here!" Witness turned round, and found the man as white as a ghost, and he was holding a piece of the horse's tongue in his hand. Witness asked the man if the horse had snatched its head up, and he replied, "No, he never moved." The piece was just under five inches long. It was apparently affected with chronic ulceration, which had been going on for a very considerable time. The detached portion did not bleed, and there was no flow of blood in the mouth; a little blood, however, was visible in half-an-hour's time. The man denied that the horse had jerked at all, and said it had been perfectly still, adding, with reference to the tongue, "Why, it's rotted!" It would be almost impossible to pull a piece off like that if the horse's tongue was in a normal condition; he was of opinion, in fact, that it would be easier to pull the organ out by its roots. On examination he found extensive ulceration, sufficient to account for easy separation. The man said it was as much as his life was worth to go to the General, but witness went and saw the General and explained what had happened.

Mr. Langham—And you are still alive! (Laughter.)

Witness—Yes, the General's style had no terror for me. The General seemed perfectly satisfied, and said he was sorry, for it was his son's first charger. Witness offered to meet any member of the profession with respect to the matter, but he emphatically negatived the suggestion, and said he could not afford to have Mr. Mannington down; he was his veterinary surgeon. He also said the animal was a hard puller and a "star-gazer." He seemed perfectly satisfied with witness's treatment of the case, saying that he had perfect confidence in his skill and ability, and should leave the case entirely in his hands. He also said, "Thank God it didn't happen on the Parade when the groom was behind my daughter." The horse was an inveterate puller and a "star-gazer," and had been used with various bits of a more or less severe type; in fact, at that interview, the General asked his opinion about one which he showed to him in the dining-room and which he,

witness, stigmatized as an "instrument of torture." Yes, he said, he thought it was a cruel thing. Witness attended the animal afterwards daily, ordering perfect quietude with soft food and slops.

On the 18th December, four days afterwards, upon entering the stable the groom said, "The General's compliments, and he does not require you to come again." "Indeed," witness said, "why?" and the groom replied, "I suppose you have heard the report about your tearing out the tongue." "What!" he said, "you know better than that; I did not even see the accident happen." "Yes, sir," the groom said, "that's right enough; the General has been down here cross-questioning me, and I told him I could go down on my bended knees before my Maker and swear you had nothing to do with it." Witness said he must have an explanation of such a charge; it was monstrous. He immediately drove towards the General's house, and in the Norman Road met him and pulled up—but he walked on, so he told his son to turn the gig round, and drove up to him; he got out and asked for an explanation. At first the General was impertinent, and stormed about the road; then he refused to hear or say anything, and finally accused him of tearing the tongue out, and said that Mannington said witness must have taken hold of it with both hands and pulled. Witness said he should make him prove what he stated, and he said, "You can do what the devil you like." Witness notified his intention of having Professor Axe down. It was the customary thing to have the horse's tongue held while the process of rasping was going on. He telegraphed to Professor Axe to come down, and upon receipt of his reply he notified to General Bethune the time he would arrive. Witness met the professor at Warrior Square station, and they proceeded at once to the Mews, where they were surprised to learn the horse had been sent away to Brighton that afternoon. However, Professor Axe examined the detached portion of tongue, which had been retained and sketched by witness, and he confirmed his opinion as to its diseased condition.

Similar confirmatory evidence had been previously given by Dr. Arthur Gamgee, who had examined the structure as simply a morbid specimen. The horse was in much better condition now than before the accident—a result he foretold to the General at the time.

Mr. Lamb cross-examined witness at length, the result being very amusing, and two or three times the answers were parried in a very adroit manner. Mr. Lamb was asking about the absence of blood, and Mr. Hill suggested that Mr. Lamb did not know where the arteries were situated in the horse's tongue. Mr. Lamb answered that he took it that there was blood all over the tongue. "That's just where you make the mistake," rejoined Mr. Hill, in a dry, cool manner. Witness strenuously denied that he ever said the horse had cancer. He would swear and could prove he never said so, but it was severely ulcerated, and the hard everted and elevated edges of the mucous membrane which formed the boundary to the ulcerated structure was in his opinion undeniable proof that destructive process had occurred at a period long before the date of separation.

Mr. Lamb afterwards got on to the question of the assistant, and suggested that it would have been the proper manner for a veterinary surgeon to take his assistant.

Mr. Hill answered—Why, my dear sir, there is not one man out of fifty in the profession that can afford to keep an assistant. I can't! (Laughter.)

The Judge—Does it require a professional hand to hold the tongue?

Witness—Certainly not; there is no skill required. It is a frequent occurrence to have a groom and a blacksmith.

Mr. Lamb—Yes; the blacksmith would naturally know something about it.

Mr. Hill—No, he wouldn't, he would be just the worst man for it.

Mr. Hill further said the man held the tongue properly, and added that they had been trying to find him, but hadn't succeeded. Perhaps Mr. Lamb's side had got him. He had never heard of a horse's tongue in a healthy condition being severed transversely across. Such a thing might be possible, but he should think highly improbable. No hæmorrhage occurred in this case, because the vessels were blocked up with pus and fibrinous matter, and the organ was already semi-detached.

A question as to why the action had not been taken before now—the occurrence dating two years back—was answered by the statement that Mr. Hill had waited for the other side to fire the first shot, but they had not done so.

Mr. Hill—"Why didn't you commence before, when Mr. Mannington was alive? I left the case entirely in Mr. Langham's hands, but at last as I continued to hear of your client gossiping with everyone he met, of this case, I determined to give him an opportunity of proving it. You know you want £50, I only want £4 13s. 6d., and an end to the matter." (Laughter.)

Re-examined—He acted under Mr. Langham's advice, which was to let the General "fire the first shot."

Professor John Wortley Axe, Professor at the Royal Veterinary College, said he came down to see Mr. Hill on receipt of a telegram. He showed witness a portion of a horse's tongue. He found a small scar on top of the tongue, and the under-surface of it was in an ulcerated condition. It was only part of the tongue, and the ulceration existed upon the part from which it had been severed. The muscular structure was also softened and infiltrated. He received from Mr. Hill a history of the case, and from his examination of the tongue, and the statement by Mr. Hill, he came to the conclusion that no great force had been used in its being severed from the body of the tongue; and, in his opinion, it was not likely that a healthy tongue would have been severed in that way except with considerable force. He saw nothing in the part of the tongue inconsistent with the account of Mr. Hill. It was desirable that the tongue should be held in an operation of that sort, and it was not the custom to have a skilled assistant. He had seen the horse that morning; it was in a good condition. It was an old animal—over twelve years old. He saw no trace of cancer in the piece of tongue. Mr. Hill had a good reputation in the profession, not only as a practitioner, but a distinguished writer. In severing the tongue, two vessels, with their ramifications and extensions, would be also severed. He would rather not account for the absence of blood.

Cross-examined—The ulceration was half-an-inch thick through the tongue. The upper part was sound, and he would have expected the sound part to have bled.

The Judge—Professor Hill tells us there was no bleeding; can you account for it?

Witness—I prefer not to attempt to account for it.

The Judge—I think if you have a theory you should tell us.

Witness—I cannot account for it not bleeding.

The Judge—You saw no sign of cancer?

Witness—No.

Mr. Lamb—Did Mr. Hill suggest anything about ulcer?

Witness—I don't recollect him doing so.

Re-examined—The present improvement in the condition of the horse was a natural sequel to the removal of the portion of diseased tongue.

Mr. Hill, re-called, said—I did not say, "My God, you have pulled the horse's tongue out; it will bleed to death." I don't use my Maker's name in vain. The defendant does, but I do not.

Professor Pritchard, President of the Royal College of Veterinary Surgeons, Member of Council, and Examiner in Anatomy, gave similar evidence. Even in a healthy tongue being severed he would not expect to find much bleeding. The vessels of the tongue when stretched or torn would curl backwards. Professor Pritchard also gave evidence as to the necessity of getting some one to hold the tongue during the time the teeth were being rasped, and said that it would have been almost impossible to pull the tongue out in the manner described if it was in a healthy condition.

The Judge—It was not necessary to have a skilled assistant to hold the tongue. A groom usually did it.

George Fordham, M.R.C.V.S., veterinary surgeon from Willesborough, near Ashford, also corroborated, and said that if the tongue was in a normal condition it would have been impossible to detach the portion in the manner stated. The vessels would most likely be sealed by pus, which would account for the absence of hæmorrhage.

The Judge—A tongue in a normal state could not be torn away without very great force; he doubted whether a man could pull a horse's tongue out if he tried. He had seen the horse, and considered that before losing his tongue he was worth £40.

By Mr. Lamb—He would not be surprised to hear that £180 was given for the horse, as an officer's charger, a few years ago. People often gave fabulous prices.

Edward Hollingham, M.R.C.V.S., and Inspector of the South-Eastern Counties district under the Contagious Diseases Act, also gave evidence, and said the horse was better without the diseased tongue than with it. It was impossible in his opinion to pull a healthy tongue in two. It was not necessary to employ a skilled assistant to hold the tongue.

Robert James Barton, M.R.C.V.S., veterinary surgeon, of Eastbourne, also gave expert evidence on behalf of the plaintiff. He considered it was impossible to detach a healthy tongue in the manner described; the animal would bleed to death. He agreed entirely with Mr. Hill's method of operating.

By Mr. Lamb—Had never heard of a healthy horse's tongue being pulled in two without hæmorrhage. Its diseased condition was quite sufficient to account for the absence of bleeding.

This completed the case for the plaintiff. Mr. Lamb then proceeded to address the court for the defence, and reviewed the evidence he intended to call. He submitted that with the exception of a little inflammation the tongue was healthy, and that great and unnecessary violence must have been used to have pulled out the tongue. Plaintiff should have brought an assistant with him to hold it, or he should have given proper instructions to the man who was holding the tongue as to how he was to hold it. The horse threw up his head whilst Mr. Hill's back was turned, and in consequence of the way in which the tongue was held it came off.

General Patton Bethune, the defendant, was then called, and as soon as he got in the box he made a statement to the effect that Mr. Hill had declared the horse's disease to be cancer, and that when he found that would not do he had a meeting of all the veterinary surgeons round to get them to say it was ulceration. He thought that he was not to be believed. In answer to Mr. Lamb, defendant deposed that the horse in question was his property. It was his son's first charger in the 7th Hussars, and witness bought it from him. It was in fairly good condition in December, 1886, and in consequence of it having a swollen tongue he called in Mr. Hill to attend to it. Later on he sent for Mr. Hill to rasp the teeth, as they were uneven. He afterwards learnt from Mr. Hill that part of the horse's tongue had come off during the operation. Mr. Hill brought the piece of tongue, and said, "It's

a good thing it did not fall off on the parade when your daughter was behind it." Witness said, "Yes! I should think it was." He afterwards sent the horse and tongue to Mr. Mannington, a veterinary surgeon, and he told him that Mr. Woodruffe Hill had treated the case wrongly. In consequence of that he told the plaintiff to discontinue his visits. He met him on the parade one day, and plaintiff was very insolent to him, and said "he should make me prove it, and all that sort of thing, you know, and really I thought the man was going to strike me." (Laughter.) He claimed £7 15s. 6d. for attendance on the horse and medicine, £30 for depreciation, and £12 for losing the use of the horse.

Mr. Langham then proceeded to cross-examine the defendant, who said that when Mr. Hill showed him the piece of tongue, the severed end was cut straight as if with a knife.

Asked to whom the horse belonged, the General replied, "Oh, sometimes he is mine and sometimes my son's; we change about, don't you know?" (Laughter.)

Cross-examined—He believed the tongue was jagged when pulled out, but that Mr. Hill had cut off a piece and made it square, before showing it to him (witness). It was a clean cut and "straight as an arrow." He might be mistaken, as it all happened two years ago. He remembered Mr. Hill bringing the piece of tongue to his house and pointing out the ulcerated portion, and also describing why no hæmorrhage had taken place.

The Defendant, whilst being severely cross-questioned by Mr. Langham, said, to the amusement of the court, "Don't you browbeat me, I've never been put down yet." Later on the witness said to the same learned gentleman, after the latter had been interrogating him very keenly, "I think you are giving yourself a lot of unnecessary trouble about the matter," to which Mr. Langham replied, "Oh, pray don't mention it, please."

The Defendant—"You might just as well save yourself the trouble of asking me all these questions."

The witness denied that he had ever shown Mr. Woodruffe Hill a bit which he had to use for the horse. Mr. Hill did not say it was an instrument of torture. It was not necessary to use a powerful bit for the horse. He considered Mr. Hill was thoroughly incompetent, but he might have recommended him a short time since to Mr. Barlow Webb. He would not say he had not, but you know it's all two years ago. (Laughter.)

Dr. David Black deposed to having examined the piece of tongue, sent to him for the purpose, microscopically. He made sections of it, and found no trace of disease. He looked at the edge, which appeared to be rather jagged. He thought there had been no ulceration in the tongue.

By Mr. Langham—He was not a veterinary surgeon. The piece of tongue was in a good state of preservation in methylated spirits. The tongue might have been cut square with a knife. There were no signs of ulceration where he examined it, nor were there any signs of infiltration. The tongue appeared to have been cut: it looked more like a cut than a tear. The piece submitted to him only measured $2\frac{1}{2}$ inches. He kept the tongue for some months, and then destroyed it. He could not have said what animal the tongue came from if he had not been told. It was not a human tongue—it was too large for that.

A veterinary surgeon named Morton, who was formerly engaged as assistant by Mr. Mannington, but who has now taken that gentleman's business, was next put in the box. He deposed that in 1886 the horse was sent to Mr. Mannington for treatment. The tongue was also sent; it was in a perfectly healthy condition. He sent the tongue to Mr. Black. He saw no trace of ulceration in the remainder of the horse's tongue. The end of the tongue looked as if it had been torn out with a rope.

By Mr. Langham—It might have been cut square with a knife. The stump end of the tongue in the mouth was jagged, not like the detached piece. The teeth of a horse could be rasped without the tongue being held, by the file being put into the mouth. He had filed the teeth of three horses in the last fortnight without having the tongue held. He had never seen any other veterinary surgeons do it, and could not give the name of any member of the profession that did it besides himself. He had gained his experience at Wolverhampton. He did not know himself of a horse's tongue in a healthy condition being pulled out. When he rasped a horse's teeth he always told the man who held the tongue to let go if the horse threw his head up. Professor Axe made morbid anatomy his special study, and was one of the first men in the profession; but supposing he did hear that the Professor had seen the tongue some time before him and declared it was ulcerated, he should stick to his opinion. The piece of tongue he had was about two and a half or three inches long. He thought that the whole tongue would not be more than eight inches long.

Mr. Langham—I put it to you: would it not be quite fifteen inches long? Remember you've seen the horse.

Witness—No, it would not be as long as that. The piece sent to Mr. Mannington was a third of the whole tongue. The length of the free portion of a horse's tongue, from the tip to the frænum, would be two inches.

Mr. Langham—Then a full-sized horse's tongue would be under or about eight inches?—Yes.

Mr. Langham—Does not a colt's tongue measure more than eight inches or a recently born foal?—It might.

William Williams, groom to the defendant, gave evidence as to the horse's tongue coming off in the yard. The man who was holding it was a gentleman's servant in the yard—a groom. His name was Henry, but witness knew neither his surname nor the name of his master. Witness held the twitch and the horse's ear. While Mr. Hill went to wet his file the horse threw his head up and nearly pulled witness off his feet; the other man was taller, and he did not get pulled up. When the plaintiff saw the tongue he said, "A nice thing you've done; you've pulled the horse's tongue out!" Plaintiff said that the tongue was diseased with cancer.

By Mr. Langham—He did not give the other man anything, nor did he treat him at all. Soft food was ordered the horse by Mr. Hill. About a pint of blood came out of the horse's mouth afterwards. Though witness's hand was close to the mouth none came on his hand, because he had taken the twitch off. The witness caused great laughter by constantly replying to Mr. Langham's numerous questions, "No, not to my knowledge."

By the Judge—I was holding the twitch when the horse put up its head, and the animal pulled me right up. Mr. Hill said to the man, "You've done a pretty thing; you've pulled out the horse's tongue." On looking at the tongue Mr. Hill said it was cancerous.

Florence Bethune, daughter of defendant, was called, and said Mr. Hill told her when he brought the tongue to the house that it was diseased.

His Honour, without calling upon Mr. Langham to reply, in giving judgment, said he could not see that there was any negligence on the part of the plaintiff, for he considered the pulling of the horse's tongue out an accident, although it was a most extraordinary accident, as all the witnesses had said. The surgeon had not got hold of the tongue when it came out, but a man who was called by the defendant's groom. There was no evidence to prove negligence on the part of the plaintiff, who was an eminent member of his profession, and the items of the plaintiff's bill had been proved to be correct and proper. The operation was an ordinary one, and it was the usual thing

for some one to hold the horse's tongue while it was being done. It appeared, too, that this did not require any special experience. The groom told them that the man who held the tongue was the groom of a gentleman, and as such he might be considered to have a knowledge of horses. Judgment would be given for the plaintiff, Mr. Woodruffe Hill, on both claims, with costs in both cases.

The result was received with applause.

Considerable amusement was occasioned after the verdict by the General being under the impression he had won the case.

Notes and News.

ROYAL ACADEMY OF SCIENCES OF TURIN.—This learned body gives notice that from the 1st of January, 1887, the new term for competition for the seventh Bressa Prize has begun, to which, according to the testator's will, scientific men and inventors of all nations will be admitted. A prize will therefore be given to the scientific author or inventor, whatever be his nationality, who, during the years 1887-90, "according to the judgment of the Royal Academy of Sciences of Turin, shall have made the most important and useful discovery, or published the most valuable work on physical and experimental science, natural history, mathematics, chemistry, physiology and pathology, as well as geology, history, geography and statistics." The term will be closed at the end of December, 1890. The value of the prize amounts to 12,000 Italian lire.

THE TZE-TZE FLY AND MAN.—All who have read works of travel in Central Africa must be aware that the country is infested with the tze-tze fly, the bite of which insect is fatal to beasts of burden. Hence, amongst many tribes men ride on the backs of their slaves for lack of horses, a custom which, according to Sir Richard Burton, accounts for the tale of Sindbad and the Old Man of the Sea. That the tze-tze is a grave impediment to efficacious transport in Equatorial Africa has long been known. The question as to whether it is noxious to man is much disputed. Father Leroy, a Catholic missionary, has recently been enabled to forward a number of specimens of the fly to M. A. Laboulbène, who is about to make a series of inoculations, together with Professor Straus, in order to investigate the nature of its poison. In making his way towards Zanzibar, Father Leroy crossed a barren plain, where buffaloes, zebras, giraffes, and antelopes abounded. From sunrise to sunset the tze-tze let him have no rest. After receiving 200 bites, he began to suffer from a disease which he likened to Urticaria; it lasted two days. During a previous expedition he suffered from the same affection, and, as the itching was intense at night, preventing all sleep, and the fly attacked him all night, the reverend missionary must have suffered fearful discomfort and much consequent exhaustion. Shortly before the passage of the caravan with which he travelled on his second journey, a warlike tribe had encamped on the desert plain with 300 oxen. The neighbouring tribes, on the alert, suddenly lost sight of the enemy. It transpired that the tze-tze fly had worried the oxen so that the aggressors had to retreat. M. Laboulbène considers, in a communication recently made to the Académie de Médecine, that Father Leroy's evidence proves that the tze-tze's bite cannot be venomous to man. Whilst it is known to kill cattle, and in this case scattered a large herd, a human being bore 200 bites with no other result than a kind of Urticaria, such as frequently follows the bite of small flies in

Europe. There is no proof that the poison of the tze-tze is simply conveyed to cattle and horses from carrion.

FIVE LAMBS AT A BIRTH.—“J. B.” writes as follows to the *Mark Lane Express*:—“On Lord Emlyn’s House Farm, in the year 1878, a Cardigan-shire ewe dropped five lambs, three black and two white, all of which were reared, the ewe rearing three entirely herself. The lambs were got by a Shropshire lamb.”

FACTS AND FANCIES.—It is amusing sometimes to observe the extent to which clever people’s fancies will carry them. In the British Army during 1887 there was not a case of Glanders, yet the *Allahabad Pioneer* has the following interesting notice from the pen of its London correspondent, under date of November 16th. The Chinese have a proverb which says that “A lie has no legs, and therefore cannot stand; but that it has wings and can fly.” It is a good flight from London to Bengal:—“It is a startling thing to learn on the authority of the *Veterinary Record* that the army lost, by Glanders and Farcy last year, no less than 1,445 horses—equivalent to one-eighth of the whole number. If the disease is of such proportions under military regulations, what must it be in private stables, and where the animals are not so well looked after, and the chances of infection are vastly greater. Surely here is scope for the genius of a Pasteur. The number of remounts purchased in 1887 was 1,343. The loss from one cause alone was 102 in excess of the new importations. Putting the value of the horses lost at the modest figure of £12 each, it represents a sum of £17,340, which, in the opinion of men competent to judge, might at least in great part be saved to the country. Why should not Glanders be as effectually stamped out as Small-pox? The difficulty of detecting the disease is no doubt great sometimes, but with horses one could deal with doubtful cases in a manner that would be impossible of adoption with the human animal. If the loss in army horses was so great, it would be interesting to learn what a large private institution loses under the same heading. The London General Omnibus Company own pretty nearly as many horses as are kept for army purposes. Their experience would be instructive. If the disease is as common with this Company’s animals as, according to the *Veterinary Record*, it is in the army, it calls for national action. But if, on the contrary, there is less loss with them, then our military veterinary surgeons must have something to learn, or the rules and regulations are evidently defective somewhere.”

BUFFALO BREEDING.—The last year of the great buffalo herds in the Canadian North-west was 1878. During that summer the great plains of the Saskatchewan were dotted and darkened with buffalo herds for hundreds of miles, and in the words of a recent correspondent of this paper the country was “one robe.” Of course the hunters of all kinds repaired thither from all regions, and the slaughter was great. The supply of robes then sent to Winnipeg is hardly yet exhausted. One band of Indians, returning to that city laden with spoil, drove in five buffalo calves. For four years these buffaloes were allowed to ramble about in company with the ordinary cattle of the vicinity, until 1882, when the whole herd, now numbering twenty-three, including hybrids with the domestic cattle, were sold to Mr. Samuel Bedson, at Winnipeg, who set about endeavouring to supply a ranch animal that was better adapted to withstand the rigors of the climate and scarcity of food than the common neat cattle. The domestic animal is liable to great mortality from drought, frost, snow, starvation, disease, stampede, and to some extent from wild beasts. Its flesh is certainly of the highest grade, but its hide is not worth more than a couple of dollars. The buffalo’s characteristic disadvantages are the comparative inferiority of its flesh, the great size of

the fore-quarters and the slightness of the hind-quarters. On the other hand, all records, and all Mr. Bedson's experience, go to show that the buffalo enjoys complete immunity from all disease, and in winter and summer it can feed itself on the prairie grasses even when it has to dig for them through a couple of feet of snow. Again, the hide is worth from ten to fifteen dollars. Once a year the buffalo sheds its fleece, scraping it off in great flakes against bushes and trees. This is easily gathered and readily worked up into a yarn that will compare favourably with that produced by the inferior breeds of sheep. Each animal yields from ten to twelve pounds of the raw material. The buffalo is greatly inferior as a milker to its domesticated relative, but as a draught animal it is stronger, quicker, and more enduring. It is a remarkable fact that the buffalo and *Bos taurus* are interfertile in all degrees of hybridity. As a result of crossing, Mr. Bedson has succeeded in producing an animal which in a great measure unites the best qualities of both species. It is of nearly the same shape as the common steer and therefore much better for beef, and is invested with a robe of long soft glossy fur which is almost even in length all over the animal, and varied in shade from light-brown through brindle to pure black. It is also improved as a milker. It retains the hardiness of its wild progenitor, and altogether gives good promise of being the ranch beast of the future.

VETERINARY HONOUR.—The *Irish Sportsman* makes the following announcement:—Mr. Thomas H. Simcocks, V.S.—This well-known and popular gentleman, Fellow and Senior Vice-president of the Royal College of Veterinary Surgeons, has just been appointed by the Lord Lieutenant to the important office of high sheriff for the town of Drogheda.

AUSTRALIAN SHEEP.—Under the heading, "The First Sheep in Australia," *Colman's Rural World* has the following: In 1797 three Merino rams and five ewes were carried there, but so slow was the introduction of the production of wool into these colonies that it was not till 1807, ten years later, that the first bale of wool was carried from Australia to England. But the flocks of Australia did not originate from that source. The development of fine wool husbandry in these colonies was the result of an accident. Some English whalers captured in the South Seas, about the beginning of the present century, a vessel proceeding to Peru from Spain in which there were 300 Merino rams and ewes. These sheep were carried to Australia, and originated the fine Merino wool whose production is now sold in a special market at London, to which all the manufacturers of the world resort.

A VALUABLE RACE OF COWS.—The Holstein Fresian cattle continue to attract great attention in America, the yields of milk and butter which the breed has attained there being quite surprising. One cow has reached the astounding yield of 30,000 lbs. of milk in a year. Another cow has reached 28 lbs. of butter in a week, while 17 or 18 lbs. appears to be quite common. It is said that the breed is as hardy as the American scrub, has no hereditary tendency to disease of any kind, and is peculiarly plastic in its adaptations. In this connection it is significant that Mr. Peppin's pure Holstein cow won both the milk and butter test at the National Society's late show.

A PROLIFIC EWE.—An extraordinary case of prolific lambing has lately occurred at Knott Oak Farm, Ilminster, Somerset, where a Dorset Horn ewe, purchased at the last Dorchester Pounbury fair from Mr. W. Mayo, Friar Waddon, Dorchester, by Mr. Paull, has given birth to no less than five lambs, four of which were born alive and still survive. This is another instance of the great fecundity of the Dorset Horn breed, and is a valuable testimony to their worth for breeding purposes. Mr. Mayo's has long been recognised as one of the best flocks in Dorset.

EXECUTION OF VICIOUS ELEPHANTS.—A curious execution has been accomplished at Philadelphia—the putting to death of the famous elephant known as Chief, and owned by Mr. Forepaugh, circus proprietor. The elephant was very large and exceedingly vicious, having killed seven men during the nine years he has been in America. He was about forty years old. The killing of the animal was effected in an ingenious manner. He was so vicious that it required the greatest caution to get near him; but after much effort a noose was slipped about his neck, the ends being left long. These ends were then fastened to two other elephants, one being placed each side of Chief, who was heavily chained so that he could not move. When the ropes were prepared young Adam Forepaugh gave the word, and the two side elephants were suddenly prodded with iron. This caused them both to pull away from Chief in opposite directions, and in twenty seconds the huge pachyderm fell dead, strangled. Another large and vicious elephant is shortly to be killed. This animal is about twenty-five years of age, and like the other, Chief, has a record for killing his keepers. He has now become so dangerous that no one dares go near him. His exit is to be made to serve the ends of science, by being made the test for the new system of death by electricity. All criminals in New York State who are condemned to death are to be killed by electricity, and it is this system which is to be tried first on the great elephant. Mr. Thomas Edison, Professor Doremus, and Elbridge T. Gerry, the latter the president of the New York Society for the Prevention of Cruelty to Animals, have been experimenting this week at Edison's laboratory, to discover what amount of electric current is necessary to cause instant death. Their next experiment will be on the fierce brute at Robinson's Circus.

AN INVASION OF SHEEP.—The statement is made in an American paper that "vast flocks of sheep are reported to be overrunning the country in San Miguel, Valencia, and Bernalillo counties, New Mexico, having been driven from Western New Mexico owing to the scarcity of water and grass in that section of the territory. Two hundred thousand head are now at Trinchera Lake, in the vicinity of Pinos Wells, and at Fort Sumner 130,000 head are drinking dry all the watering-places."

DEPREDATION BY WOLVES IN AMERICA.—The statement is made in the *Times*, Deadwood, Dakota, that "Green Todd, from the Bear Lodge country, reports great devastation among colts by wolves. Out of a drop of one hundred he has only forty left. He killed three wolves, including the most ferocious one, and that had done most damage. Reports from Montana ranges indicate great loss also by wolves."

GIGANTIC SHEEP.—There is an extraordinary race of sheep—the biggest in the world—which has its habitat on the Alai range, in the extreme south-east corner of Turkestan. It is the great mountain sheep of the Pamir plateau—the *Ovis poli* of Marco Polo. The *Ovis poli*, we read, is an animal 12½ hands high, with a head and horns which are the envy and despair of all the hunters of Asia. Magnificent indeed are the curved and involuted horns, measuring at least five feet between the tips, but each horn measured from the base along the curves is six feet long. This huge sheep lives in the most inaccessible corner of the most mountainous region in all Turkestan, just to the north of the great Pamir plateau, the first of the gigantic series of mountains that form the northern bulwark of India.

THE ORIGIN OF TETANUS.—At a recent meeting of the Académie de Médecine, of Paris, M. Guérin spoke on the origin of Tetanus. He said that modern researches inclined to prove that the disease was infectious and transmissible. This doctrine had a warm partisan in M. Verneuil, and he himself was ready to adopt the same opinion. The fact that Tetanus is

inoculable has been placed beyond doubt by the works of Rosenbach, Colin, Carle, etc., but the agents of the inoculation were not yet clearly defined. According to the several autopsies he had made in such cases, he was led to believe that the agent of infection should be sought for in the partial myelitis which is generally present. Were those agents micro-organisms, the simple subtraction of other patients from the *foyer* of infection would suffice; and yet it was far from being so. In any case, he had witnessed a transmission of Tetanus in spite of every antiseptic precaution. Consequently, he was disposed to consider that the malady is engendered by a poison similar to the virus of a dissecting wound, or perhaps to that of Rabies, which is inoculable, but not transmissible by the surrounding atmosphere.

POISONOUS BLOOD.—M. Mosso, of Turin, having carried out a series of experiments with the blood of eels, finds that it possesses markedly poisonous properties. Even to the tongue it has an insupportable acidity, and a very small quantity of the serum is sufficient to kill a dog. Half a cubic centimetre injected beneath the skin of a dog weighing thirty-five pounds killed it in four minutes. At this rate, an eel weighing five pounds would contain enough poison to despatch ten men. The blood of animals thus poisoned cannot be made to coagulate, just as after the bite of serpents. Fortunately, the blood is inert when introduced *viâ* the stomach, and it loses its toxic properties when heated.

Correspondence.

HEREDITY IN DISEASE.

SIR,—In Mr. Hunting's paper on "Heredity—Its Influence on Conformation and Disease," Splints were referred to. "Nearly all our horses show them; that no indigenous breed in a new country does until crossed with European horses."

I would like to state that I have detected Splints in "well bred" Syrian and Delta Arabs; in fact, they are not uncommon. If accepting Mr. Hunting's view, I must conclude that all these Arabs have a touch of European blood, or I must think that horses, other than those crossed with European ancestors, can have Splints. I incline to the latter.

In speaking of "*Roarers*," Mr. Rutherford stated that "the disease is unknown among Arab horses." I have recently detected "*Whistling*" in *two* and Roaring in *three* cases, but do not think it common among Arab horses.

Cairo, December 24th.

WILLIAM LITTLEWOOD, M.R.C.V.S.

PARTURIENT APOPLEXY.

SIR,—Some time ago we had Major-General Brown upbraiding us for the plentiful lack of knowledge that characterised us of diseases in general and of Tetanus in particular. The same gentleman, by the way, has recently been claiming, in a penny agricultural paper, that he is the discoverer of the therapeutic value of calomel in Thrush. Surely he might sing, with that other distinguished officer in the "*Pirates of Penzance*"—

"I am the very pattern of a modern Major-General;
I've information vegetable, animal, and mineral."

In last month's Journal, however, the Major-General, who seems to have doctored no animal but his own, is quite surpassed, for in that issue we have a pleasing account of part of the symptoms and *post-mortem* appearances of several cases of Parturient Apoplexy, treated by an M.B., C.M., B.Sc., etc.;

at least, as no veterinary surgeon's name is mentioned, it is to be presumed that the treatment was carried out by the gentleman who records the cases. If these cattle did belong to Mr. Thomas, he, in becoming his own veterinarian, has taken on the character of the man who became his own lawyer.

We have no indication as to how the creatures were treated, except, indeed, that we read at the end of the communication that "there is no remedy against Septicæmia."

If Mr. Thomas will employ a good veterinarian, of whom there are plenty around Preston, to treat the next four cases, I have not the slightest doubt but that he will find that there is a remedy against Parturient Apoplexy. Mr. Thomas speaks of this as a febrile disease, but he does not seem to have used his thermometer. Had he done so, it would have been evident to him that there is no fever connected with the malady. It is rather against evidence to talk of this disease being due to insanitary surroundings, untrapped drains, etc. I believe that the "shippons" on the small farms in this part of the country are the filthiest in the world, and Milk Fever is almost unknown among them; but it is by no means infrequent in well-managed dairy farms, and among the dairy cattle of gentlemen and those of public institutions where the sanitary arrangements are all that can be wished.

I think that—

- (1) The absence of rise in temperature,
- (2) The fact that the disease never appears till after the second calf,
- (3) That it only attacks plethoric cows or deep milkers,
- (4) That the presence of putrid foetal membranes in the uterus fails to induce the disease,

are sufficient to justify us in concluding that Mr. Thomas is wrong in considering Milk Fever to be a form of Septicæmia.

WM. R. DAVIS.

Douglas, Isle of Man.

"HIPPACEA."

SIR,—Kindly allow me space to reply to "J. Nettelton's" letter under this heading in your issue for November. That communication is certainly suggestive of "tactics," a prominent one being the gratuitous advertisement "J. N." gives of himself as a "follower of Lister." It is a pity, however, that he has made such a gross mis-statement as to assert that £7 worth of "Hippacea and other quack nostrums" were sent by this company to a chemist in his town on "sale or return." I challenge him to prove this assertion. This "follower of Lister" did not hesitate to receive, apparently gladly, a free tin of "Hippacea" from my representative, which I understood he promised to try and report on, and in the ordinary course of business the following letter was addressed to

"Mr. Nettelton, M.R.C.V.S., Northallerton.

"Dear Sir,—Dr. Seelig writes us that he left with you a sample tin of 'Hippacea' for use. We shall be very glad to receive a few lines from you as to any note you may have made of its effect upon the trial case.—Yours, &c."

Whether there are any "tactics" in this proceeding that the members of the profession will be grateful to their champion for being "warned" against, I leave to them to determine, and will merely assert, in the strongest manner possible, that the company under my management has no "tactics" beyond bringing in a straightforward and perfectly legitimate manner to the notice of the profession a preparation that their brethren have found exceptionally valuable, and giving them the opportunity of testing its properties for themselves, and then, if they wish to do so, say what they think of it.

Mr. Nettelton has quoted the direct testimony of two gentlemen, both perfectly qualified and able to "see" and "reconcile" what your correspondent admits being incapable of doing. He has not evidently tried what he affects to denounce as "such stuff." I will not insult your liberal readers by supposing that they will not accept the direct statements of fact resulting from actual experiments, as vouched for by their professional *confrères*, rather than the "warning" of J. Nettelton, the strength of whose case rests solely on the admissions, "I suppose," "I fail to see."

I repeat that I shall be glad to send any veterinary surgeon a free tin of "Hippacea" if he will write for it, and judge for himself of the value or otherwise of the preparation that has received such unqualified endorsement by such members of the profession as Mr. Nettelton has the temerity to taunt as, "Not followers of Lister."

December 27th.

For Henry's Great Indian Remedies, Limited,
F. H. BOWDEN,
Managing Director.

THE NATIONAL VETERINARY ASSOCIATION.

DEAR SIR,—May I trouble you to kindly insert the following facts respecting the correspondence that has recently taken place between Messrs. Hurndall and Simpson and myself?

As Messrs. Hurndall and Simpson do not think fit to give me those generous and straightforward answers I asked for, we may presume, firstly, that Mr. Hurndall received *all* the necessary information upon which he founds his "grievances" from Mr. James Simpson; secondly, that such information was received by Mr. Hurndall *before* he wrote his letter in the *Veterinary Record* of October 27th, and therefore quite independently of Mr. Hunting's report of the first meeting of the Provisional Committee in the *Veterinary Record* of October 20th; thirdly, that Mr. James Simpson not only gave the information he publishes in the *Veterinary Record* of December 8th, but also *every particle* of information which Mr. Hurndall has published in reference to this matter, and, as a matter of fact, *no other source of information was open to him*.

With your permission, Mr. Editor, we will now give your readers the "generous explanation" which Mr. Simpson says he has so long watched for.

Mr. Hurndall asks in the *Veterinary Record* of October 27th:

1. How it happened that he was not elected on the Provisional Committee?

Answer. Because he was not elected by the President and Vice-Presidents for 1889.

2. Has some new departure been made this year?

Answer. No.

3. Is it a case of another ring being formed?

Answer. No; for "rings" are unknown in the National Veterinary Association—at least, to the Secretary.

4. Is it negligence on the part of the Secretary?

Answer. If this refers to Mr. Hurndall not being elected on the Provisional Committee, the answer to his first question is sufficient.

5. Has any other member of the profession been left out in the cold?

Answer. If this also refers to those *not* elected on the Provisional Committee, we may take it for granted that everybody (except those on that Committee) is "left out in the cold" in Mr. Hurndall's opinion.

In the *Veterinary Record* of November 10th, Mr. Hurndall asks:

6. Who elected the Provisional Committee?

Answer. The President and Vice-President for 1889, appointed to do so by the Council at Newcastle.

7. Who are the members of that Committee?

- | | |
|----------------------------|--------------------------|
| 1. Professor Axe. | 13. Mr. F. Oatway. |
| 2. Mr. A. Broad. | 14. Professor Penberthy. |
| 3. Mr. J. R. Cox. | 15. Mr. F. Raymond. |
| 4. Mr. W. Duguid. | 16. Mr. J. Rowe. |
| 5. Dr. G. Fleming. | 17. Mr. F. G. Samson. |
| 6. Mr. W. Hunting. | 18. Sir H. Simpson. |
| 7. Mr. H. Kidd. | 19. Mr. J. Simpson. |
| 8. Mr. G. Lepper. | 20. Mr. C. Sheather. |
| 9. Mr. H. Lepper. | 21. Mr. S. Villar. |
| 10. Professor J. Macqueen. | 22. Mr. J. P. S. Walker. |
| 11. Mr. T. Moore. | 23. Mr. A. Wheatley. |
| 12. Mr. W. J. Mulvey. | 24. Mr. J. Woodger. |

Ex-officio.—Professors W. Pritchard and Williams, and Messrs. F. W. Wragg and Banham.

8. How it was that Mr. Edgar and Mr. Hurndall were not allowed to take part in the election of the Provisional Committee?

Answer. Because neither of these gentlemen was appointed to officiate in that capacity by the Council.

In the *Veterinary Record* of December 1st, Mr. Hurndall quotes Rule 53 as follows: "The Provisional Committee shall be elected directly or indirectly by the Council from among the members of the Association living in the neighbourhood of the place appointed for the next general meeting;" and asks—

9. Was this done in the present instance and the rule duly observed?

Answer. The Provisional Committee was elected *indirectly* by the Council, as they appointed the President and Vice-Presidents for 1889 to do so, because these gentlemen would know better who to elect than they did themselves.

That they were elected from the neighbourhood of the metropolis, as much as the Committee of 1883 which managed the last meeting held in London was, may be seen by comparing this year's list with that published at page 11 of "The First Year's Proceedings of the N.V.A." Therefore I think we may truthfully say that the rule has been as duly observed this year as it has ever been since the foundation of the Association, and that "the gentleman" (Mr. J. Simpson) who advised Mr. Hurndall to the contrary *is wrong*.

Then Mr. Hurndall says, in the *Veterinary Record* of December 1st, that the meeting which elected this Provisional Committee "was called (not by the General Secretary, as one would suppose), but by another officer." Surely, sir, this is rather like a man wrangling with his own shadow for the sake of quarrelling with something, and is not worthy of further comment here.

In the next paragraph he says he is "informed on high authority (Mr. James Simpson) that though the President-Elect (Prof. Pritchard) was at the meeting, the President (Prof. Williams) was never consulted as to the calling such a meeting, nor was he ever advised that it was to be held, consequently he was not present."

In answer to this, we would remind Messrs. Hurndall and Simpson that we have yet to learn that it was our *duty* to advise the President of 1888 concerning this matter, the Council having deputed the President and Vice-Presidents for 1889 to perform this duty; so here again Mr. Hurndall was erroneously advised by Mr. Simpson as to the meeting being "informal and irregular."

Mr. Hurndall was told (by Mr. James Simpson, of course) that thirty gentle-

men were elected to serve on the Provisional Committee. It is quite true that thirty names were proposed and seconded, but Mr. Simpson was not frank enough to tell Mr. Hurndall that six of them were to be left as reserve men, if only twenty-four could be elected. The Secretary did not quite understand which of the thirty names proposed should be the reserve, so he thought the easiest way to find this out was for each of the electors (the President and Vice-Presidents for 1889) to run his pen through six names on a list of the thirty sent to him; and this method proved a very convenient and successful one, for nearly all (Mr. J. Simpson excepted) chose the same names to be put on the reserve. Neither was there anything very "novel" in this procedure, as similar methods have been resorted to before. Moreover, it was hardly worth troubling these gentlemen (who volunteer this work) to meet again for such a trivial purpose.

Mr. Hurndall impertinently asks, "Should not the Secretary have known the proper number in the first instance?"

Answer. The Secretary did inform the meeting and Mr. Simpson that twenty-four was the number to be elected, but he could not say decidedly whether any more *could* be elected or not.

Mr. Hurndall goes on to say that if it is correct that the Provisional Committee have been elected by the President and Vice-Presidents of the coming year, "Mr. Banham is convicted on his own confession of serious irregularity, for as General Secretary it surely is his duty to see that the rules are strictly observed and not infringed."

Answer. This confession is no conviction, for the Council did *indirectly elect the Provisional Committee*, since they deputed the President and Vice-Presidents of 1889 to do so; and, therefore, no rule has been infringed; and the same manner of election has taken place ever since the commencement of the Association.

Mr. Hurndall also finds fault with the election of members on the Provisional Committee residing in localities many miles distant from the metropolis, instead of being members of the Association living in the neighbourhood of the place appointed for the next general meeting; and he says, "no stretch of imagination can bring them within the scope of Rule 53; therefore this is a breach of that rule."

Answer. Mr. Hurndall is himself answerable for this, since he confesses it was mainly through his and Mr. Edgar's resolution at Newcastle, that the next general meeting was transferred from Reading to London. But neither he nor Mr. Edgar put a resolution to reject the invitation of the Royal Counties Society, and *we are still holding the 1889 meeting in the South, at that Society's invitation*. Therefore, it was only fair and complimentary to that Society for the electors of the Provisional Committee to appoint some of the members of the R.C.V.M.S. to act as the Provisional Committee. Moreover, I may say that Mr. James Simpson was a party to their election; and it shows very bad taste, if not bad judgment and policy on his part, to advise Mr. Hurndall to find fault with their election, especially as he is one of them himself. Mr. Hurndall will now perhaps be able to allow his imagination to bring these gentlemen within the scope of Rule 53.

Mr. Hurndall's remark and suggestion of "an undeniable slight to a number of metropolitan practitioners *who are members* of the Association," may therefore be laid at the door of his informant of high authority (Mr. James Simpson, Vice-President of the N.V.A. for 1889), more than to anybody else (not that we believe for one moment that any of the metropolitan practitioners consider themselves at all slighted).

Mr. James Simpson then comes to Mr. Hurndall's rescue, with a note from his own pen in the *Veterinary Record* of December 8th (which, by-the-bye, the Editor considered important enough to be given in large type), repeating

all Mr. Hurndall had told us, and *a little more*; this little being that I had neglected to answer his letter of September 18th. My reason for not doing so was because his letter was not couched in language that is likely to be answered by me at any time, and I am not a little surprised that Mr. Simpson should ever have thought I should reply to such a domineering epistle. Another reason was, that I refrained from entering into a correspondence with such a proverbially verbose and litigious person.

Mr. Simpson says "the violation of the rules of the N.V.A. and the abuses of its privileges are a source of wonder and regret to *all* its well-wishers." If this is *true*, it is somewhat remarkable that the Secretary of the Association has not heard of them. He is not aware that any rule has ever been violated to any considerable extent, and certainly *never to the detriment of the Association*. These spurious violations which Messrs. Hurndall and Simpson have taken so much trouble to call the attention of the profession to in public print, have, I trust, been satisfactorily and generously explained here; so that the "well-wishers" of the N.V.A. will be able to see what frivolous objections can be raised by a person who sets his vexed temper to do so.

We would urge the "well-wishers" of the N.V.A. to take no notice of Mr. James Simpson's fault-finding, since he has a little private enmity against the General Secretary, and has apparently used Mr. Hurndall as his "cat's-paw," on this occasion, to wage war against him. Finding Mr. Hurndall did not get on as well as he would wish, he enters the arena himself, and it was in anticipation of this that I originally asked Mr. Hurndall in my first letter to the *Veterinary Record* of November 3rd, to "state how, and in what way, he became acquainted with the information upon which he founds his conclusions" of October 27th. However, I consider it a *breach of confidence* on the part of Mr. James Simpson to divulge the business of a *Committee* to anybody, especially to a gentleman whose name had been mentioned, but who was not finally elected on the Provisional Committee: not that his non-election was out of any disrespect (as Mr. Simpson would lead us to believe) to that gentleman, or to any of the other five (which Mr. Simpson has been comparatively silent about), but simply because we only required twenty-four. A Committee elected by the Council is responsible to that Council alone for their actions; and if Mr. Simpson or anybody else had a complaint to make, it should have been made *to the Council*, and not to the public through the press. These petty quibbles should not, in our opinion, appear in the press at all, especially matters of private moment of this kind. THEY DO THE PROFESSION NO GOOD.

When a member of the N.V.A. poses as a "well-wisher," and takes as much pains as Mr. Simpson has done to prove so little, it is about time we began to ask ourselves, Who are the "well-wishers" of the N.V.A.? Surely not the person who, 1st, votes at his local society to invite the Association to hold its general meeting in their midst, and then at the last hour changes his mind and votes in favour of another place; or who, 2nd, votes for the election of seven members to act on the Provisional Committee from his own locality, and then holds such elections up to ridicule, or incites another to do so; or who, 3rd, publishes the work of a Committee (of which he is a member) who are only responsible to the Council which elects them; and, finally, induces his brother to endeavour to make another "cat's-paw" (*viz.*, by trying to persuade the ex-President to make another complaint), but who utterly fails in the attempt.

What does it all mean? Advancement of the N.V.A.? No, but *spite*.

GEORGE A. BANHAM,
Honorary General Secretary, N.V.A.

Downing Street, Cambridge.

ROBERTSON MEMORIAL FUND.

DEAR SIR,—At a meeting held in the Theatre of the Royal Veterinary College, in January, 1888, it was resolved to place in the Museum a bust to the memory of the late Principal.

In order to carry this into effect, a sum of £140 is required, and of this amount about £70 has already been subscribed.

Mr. Birch, A.R.A., has been deputed to execute the work.

The Committee will be pleased to receive a donation from any gentleman who studied under the late Professor Robertson, and has not already subscribed.

F. GREGORY, *Hon. Sec.*

Committee.

Professor AXE (*Hon. Treasurer*).

„ BROWN.

„ PENBERTHY.

„ SHAVE.

Mr. BYRNE.

„ H. MILWARD.

„ MARTIN.

„ JAMIESON.

Mr. F. GREGORY, *Hon. Sec.*

	s.	d.		s.	d.
Mr. G. H. Williams	10	6	Mr. Cadd	10	6
„ Beanland	10	6	„ McGilvery	10	6
„ Gale	5	0	„ T. A. Dollar	10	6
„ H. Milward	10	6	„ Hewitt	10	6
„ Hibbard	10	6	„ A. W. Stainton	10	6
„ Nesling	5	0	„ A. Stainton	10	6
„ Cobbledick	10	0	„ Gibbings	10	6
„ J. E. Abbott	10	6	„ Hammond, Sen.	10	6
„ Slipper	10	0	„ Hammond, Jun. ...	10	6
„ Emery	10	6	„ Elliott	5	0
„ Tinkler	10	6	„ H. Edgar	10	6
„ Johnson	5	0	„ W. Edgar	10	6
„ Jacobs	10	6	Capt. Russell	10	6
„ Martin	10	6	Mr. Alcherley	10	6
„ Oliver	10	6	„ J. A. W. Dollar	10	6
„ Ludlow	5	0	„ C. Sheather	10	6
„ Bishop	5	0	„ S. Greaves	10	6
„ Sugden	10	6	„ G. Banham	10	6
„ Cannon	5	0	„ Almond	10	6
„ Golledge	5	0	„ Salter	10	6
„ Reece	5	0	„ G. Williams	10	6
„ Barrett	10	6	„ J. Williams	10	6
Professor Shave	10	6	„ Galloway	10	6
Mr. Callow	5	0	„ Booth	10	6
„ Pitchford	5	0	„ Foot	8	6
„ Stewart	10	0	„ S. J. Williams	10	0
„ Burrell	10	0	„ Norwood	5	0
„ Batt	10	6	„ Gatwood	10	0
„ Allnutt	10	6	„ Groom	5	0
„ Bell	10	6	„ Willett	10	0
„ J. R. Cox	10	6	„ Head	5	0
„ Bower	10	6	„ Cranford	5	0
„ Blay	10	6	„ Briggs	10	6
„ Nettleship	5	0	„ Robinson	10	6
„ Upton	5	0	„ A. Robinson	10	6
„ Moreland	10	0	„ Litt	10	6
„ Pethick	10	6	„ W. Dollar	10	6
„ Sawtel	10	6	„ Welsby	10	6
„ Shipley	10	6	„ C. Hunting	10	6

	s.	d.		s.	d.
Mr. C. S. Hunting	10	6	Mr. Scarlett	10	6
„ Flook	10	0	„ Rea	10	6
„ Stephenson	10	6	„ Stanley	10	6
„ F. J. Harvey	10	0	„ Whygham	10	6
„ Pettifer	10	6	„ Samant	10	0
„ H. Olver	10	6	„ Abell	10	6
„ Tayler	10	6	„ Anderton.. ..	10	0
„ Morton	10	6	„ Dawson	10	6
„ Beckford.. ..	10	6	„ Porritt	5	0
„ Coveney	10	0	„ Woolston	10	6
„ Price	10	6	„ Johnes	5	0
„ Shipley	10	6	„ Welch	10	6
„ Hicks	10	6	„ Gregory	10	6
„ Tooth	10	6	„ Stratton	10	0
„ Summers	10	0	„ James	10	6
Professor McCall	10	6	„ Knowles	10	0
Mr. Carter	10	0	„ Varney	5	0
„ Baker	10	6	„ Hatton	10	0
„ Faulkener	10	6	„ Perry	10	6
„ Edwards	10	6	„ Wentringham	10	6
„ Moran	10	6	„ Page	10	6
„ Galloway	10	6	„ Perle	10	6
Professor Brown	10	6	„ Slocock	10	6
„ Penberthy	10	6	„ Clapp	5	0
General Fitzwygram	10	6	„ McGill	10	6
Mr. D. Snowball	10	6	„ McCall	10	6
„ George Fleming.. ..	10	6	„ A. Smith.. ..	10	6
„ Rogers	10	6	„ Walters	10	6
„ Worthington	10	6	Professor Williams, for Stu-		
„ Hutton	10	6	dents and Teachers of		
„ Littlewood	10	6	New Vet. College	£7	7 0
Collected by Mr. Simpkins	£5	18 0	Mr. Thompson	10	6
Mr. Walpole	5	0	„ Simpkins.. ..	10	0
„ Doyle	5	0	„ Saviourneen	10	0
„ Parsons	10	6	„ Melhuish	5	0
„ Gostling	10	6			

DISPENSING DRUGS TO QUACKS.

DEAR SIR,—I am led to understand that it is a common and growing practice for druggists to supply quacks with medicines of all kinds. In some cases when the so-called prescriptions are not readable I understand that a dose or doses are added. Please inform me if the Pharmacy Act prohibits such practices, and if so, who is the proper person to address on the subject.

“M.R.C.V.S.”

[There is nothing in the Pharmacy Act of 1868 prohibiting a registered druggist from supplying farriers or any other persons with medicines, or making up their prescriptions.—ED. V. J.]

CORRECTIONS.

DEAR SIR,—I was very much surprised, when looking through THE VETERINARY JOURNAL for January, to find in the report of the veterinary medical meeting held at Leeds on October 26th, 1888, a paper which I was supposed to have written. I most certainly should not have allowed a paper of mine to be published containing so many mistakes, both in spelling and the totally different meaning of the words inserted in the Journal. Some

time ago I promised to read a paper, but found I had not time to write one, so I wrote and told the Secretary (Mr. Greenhalgh) that I would introduce for discussion "Some Diseases of the Bowels." I made a few rough notes, which, after I had opened the discussion, the reporter asked me to lend him, in order that he might make out a report for the Journal. I lent them, on condition that he let me read the report over before it was printed. I never received the report to correct, hence the many mistakes which, no doubt, all the readers of the Journal have found out—*e.g.*, "this afternoon subject of some diseases"; "elementary," alimentary; "Colic," colicky; "charge," charges; "bolted," or bolted; "had," she had; "pains," pain; "all," all the; "sympathetic," lymphatic; "these diseases," than those of a sanguine; "resumption," recurrence; "stool," stale; "interfere," interfere with; "physostigmia," physostigmine (protective).

By inserting a few corrections in your next number of the Journal you will greatly oblige.

GEORGE T. PICKERING, M.R.C.V.S.

Oglethorpe, York, January 4th.

IN our last Obituary notice, Harrison, J. Warsop, should have been Harrison, J. *Warcop*.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Annual Meeting and Dinner of the above Association will be held at the Victoria Hotel, Victoria Street, Manchester, on Friday, February 8th. Meeting at 4.30, dinner at 6. ARTHUR LEATHER, *Hon. Sec.*

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from A. J. Haslam, A.V.D., India; R. Rutherford, Edinburgh; D. C. Pallin, A.V.D., Dorchester; J. J. Meyrick, C.B., A.V.D., Dublin; T. Marriott, A.V.D., Sialkot, India; G. T. Pickering, York; J. Mills, A.V.D., Ireland; W. Littlewood, Cairo; Edgar D. Johnson, London; G. Oliphant, Umballa, India; T. Greaves, Manchester; J. McKenny, Dublin; A. Genocchi, Turin; J. H. B. Hallen, Meerut; G. Thatcher, London; G. A. Banham, Cambridge; W. R. Davies, Isle of Man; J. Brett, Mansfield, Woodhouse, Notts; F. Smith, Aldershot; Fitz. Eassie, London; A. W. Hill, London; J. W. Hill, Hastings; A. E. Macgillivray, Banff; W. L. Williams, Bloomington, Illinois; T. Flintoff, A.V.D., Dublin; "M.R.C.V.S."; S. Villars, Harrow; A. Leather, Liverpool; F. Gregory.

BOOKS AND PAMPHLETS: *R. W. Burke, M.R.C.V.S.*, The Tropical Diseases of the Horse; *Dr. T. Graham Balfour*, Inaugural Address delivered before the Statistical Society; *A. M. Davies*, The Food of the Soldier; *H. Campbell, M.D.*, The Causation of Disease.

JOURNALS, ETC.: *Live Stock Journal*; *Mark Lane Express*; *Agricultural Journal*; *Medical Press and Circular*; *Clinica Veterinaria*; *Repertorium der Thierheilkunde*; *Journal of the Agricultural Society of Victoria*; *Der Thierarzt*; *Revue Vétérinaire*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Archiv für Wissenschaftliche und Praktische Thierheilkunde*; *Echo Vétérinaire*; *Le Répertoire*; *American Veterinary Review*; *Recueil de Médecine Vétérinaire*; *Lancet*; *British Medical Journal*; *Annales de Médecine Vétérinaire*; *American Live Stock Journal*; *Edinburgh Medical Journal*.

NEWSPAPERS: *Sioux City Journal*; *Sydney Morning Herald*; *Irish Sportsman*; *Bell's Weekly Messenger*; *New South Wales Daily Telegraph*; *Allahabad Pioneer*; *Poona Observer and Civil and Military Gazette*; *Irish Times*; *East Anglian Daily Times*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

MARCH, 1889.

ECTOPIC FCETATION (ABDOMINAL) IN A BLACK-FACED EWE.

BY JOHN FERGUSON, M.R.C.V.S., DEMONSTRATOR OF ANATOMY,
GLASGOW VETERINARY COLLEGE.

AT the request of Principal McCall, I send the following sketch of a case which, from its rather uncommon occurrence, may not be without some interest to the members of the profession :—

History.—A black-faced ewe, the property of Allan Gilmour, Esq., of Eaglesham, near Glasgow, was bought, along with a number of other ewes in October, 1887, for breeding purposes.

Leicester rams were put among the ewes in November of the same year, and removed on 1st January, 1888.

At the lambing season a number of these ewes were found to be barren ; these were retained for home use, and killed as required.

The ewe the subject of this article was the last killed, and the fattest of the lot. Nothing unusual had been noticed during life, and her condition was never suspected until she was killed and the abdominal cavity opened. Thinking the condition found therein rather peculiar and interesting, Mr. Gilmour sent the abnormality (a foetus) to the Glasgow Veterinary College, on the 6th December last, with the following description : “ The lamb which I send you was found lying on the right side, well back behind the ribs, and attached to the thin flank of the mother’s abdominal cavity—in fact, resting on the lowermost skin of the belly.”

When the foetus was examined the following were revealed :—

It was a female, well developed, and covered with wool all over, except at the point of its attachment to the maternal abdominal wall. A part of the right flank of the mother was still attached

to the left lateral aspect of the foetus. This attachment was not by any means intimate, there being no real union, but simply that which arose from the co-adaptation of the foetal-membranes to the maternal peritoneum.

The body of the lamb was quite fresh, and showed neither signs of mummification nor putrefaction.

In point of size it did not differ from an ordinary full-time intra-uterine foetus.

From the position which it had occupied in its mother's abdomen, it was very much twisted, the back being arched to such an extent as to form a semicircle.

The neck was turned in a spiral form from left to right, so that the nose was where the poll should have been, and *vice versa*.

Besides this spiral turn, the neck was twisted downwards and backwards, the head being carried outside the off fore limb and resting on the right flank.

Both the hind limbs were very much bent, every joint being flexed to its fullest extent.

The fore limbs were much in the same condition; the flexion of the off forearm was so extreme that the knee occupied almost the same position as the shoulder joint.

On examining the head, the lower jaw was found projecting beyond the upper to a considerable extent.

The eyelids on the near side were adherent, and had to be incised before gaining an entrance into the orbital cavity, which was empty, no trace of an eye being present. On the off side the eyelids did not adhere to the same extent; an eye was present, but very rudimentary, being composed only of the sclerotic coat and cornea.

The other parts of the head were normal.

On opening the abdominal cavity, the umbilical apparatus appeared to be the same as in any ordinary foetus; the liver was large, the bowels dark in colour, flabby to the feel, and partly decomposed.

When the chest was opened the ribs (from the pressure to which the sides of the chest had been subjected while in the mother's abdomen) were squeezed together to such an extent as almost to occlude the thoracic cavity. The heart was (on account of this compression) much flattened laterally; the lungs were small, smooth, and felt like liver, since they never had been inflated.

The foregoing are the anatomical peculiarities of this foetus.

On calculation, we find that it must have been in its mother's abdomen for at least not less than eleven months. Mr. Gilmour's manager suggests that it might have been there for years, but had

that been the case we should have expected mummification to have set in, of which there was not the slightest trace.

The point of greatest interest, namely, from what vessel or vessels of the mother the fœtus drew its nutriment, or what were its maternal attachments, on account of its being removed from the abdomen before our examination, we, of course, cannot state, and therefore do not feel inclined to surmise.

AN INVESTIGATION INTO THE NATURE OF THE COMMON INDIAN SKIN DISEASE.

BY A. J. HASLAM, M.R.C.V.S., ARMY VETERINARY DEPARTMENT,
KARACHI, INDIA.

THE following account of a private investigation into the pathology and treatment of the familiar Indian skin disease of horses and mules may interest some readers of the VETERINARY JOURNAL:—

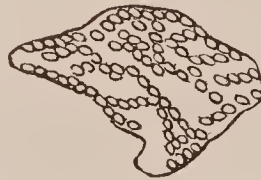
The symptoms of this disease, and the frequent unsatisfactory results of its treatment, are well known to the veterinary practitioner and to the military service in India.

The disease is generally termed “Khoojlee,” “Eczema,” “Prurigo,” “Prickly Heat” (Meyrick), and appears to be identical with the disease described as “Tropical Pityriasis” by Burke in the August number of the Journal. I am of opinion that the disease is a species of Ringworm, and would suggest the technical term of *Tinea Furfuracea* for the affection.

Microscopic examination of one case (horse No. 27, T/1, R.A.), during the month of June, showed a fungus in the epidermal cells and hairs of the diseased parts, which were in this case the sides of the neck, head, mane, front of and below the chest, and shoulders. The symptoms were manifested in the usual way by pimples, intense itching, formation of scabs, and loss of hair, in patches varying from half an inch to two inches in diameter, and of more or less round shape.

All other cases of the disease in the battery showed the same fungus. It was seen to be a fungus *extremely like* the *Tricophyton tonsurans* (the exciting cause of Ringworm), but differing slightly in its mode of growth in the skin, pathological results, and clinical aspects. The fungus was seen in the root-sheaths, hair-bulbs, and shafts, and in the epidermal cells. In the hair the mycelium of the fungus consists of long, slender hyphæ, which give off branches, and run more or less parallel to the sides of the hair, though many branches penetrate from sheath to sheath by growing across the long diameter. In the hyphæ are seen spores (*conidia*), which are set free at the breaking up of those parts of the hyphæ

which have undergone spore division. The spores are capable of forming a mycelium. Mycelia and spores are found in great numbers in the epidermis. The fungus spreads superficially, and this is the cause of the affected spots increasing in diameter when the disease is not treated. I would suggest the name of *Tricophyton furfuracea* for this fungus as a temporary one, until its



Epidermic cells invaded by masses of spores.

identity with *Tricophyton tonsurans* is positively proved. I am inclined to the opinion, expressed by several investigators, that these fungi of the various Ringworms of man and animals are one and the same, the different results being the consequence of different conditions of existence. The hairs impregnated by the fungus are brittle, and break easily. The epidermal cells, when severely attacked, lose their shape, become very irregular, and often one finds the whole cell literally converted into a mass of spores. The spores seem to destroy the entire substance of the cell, which sometimes appears to be converted into *débris*.

Pieces of the affected skin of many of the cases were placed on sterilised potatoes, agar-agar, and gelatine (the two latter from the Bacteriological Laboratory, King's College), and in two or three



Surface of a hair attacked by the fungus.

days the fungus developed. On potatoes a wrinkled compact layer of creamy, yellowish brown colour was found; on agar-agar a dirty yellow colour was produced; on gelatine (liquid in this climate) a thin creamy-coloured scum developed. In every case of the disease experimented with, the fungus was demonstrated by bacteriological and microscopical methods. In many cases of the disease, the epidermis developed on the various media well-known

atmospheric micro-organisms, such as mucor, etc.; but these varied much, while the fungus above described was always present. Inoculations with pure cultivations on the previously mentioned media always produced the same characteristic growths. The fungus was found to be aerobic, and only a small amount of moisture was necessary for its growth. It was also observed that the fungus is capable of lying dormant in the cold for many months (this was *proved* for seven months by experiment), and is then capable of developing when placed on a suitable nidus. From the results of forty-six experiments on the atmosphere of the room in which all the bacteriological investigation of this disease was carried on for over seven months, it was ascertained that only in two instances were the spores or other part of the fungus present in it. It was therefore concluded that the fungus did not migrate to any extent by means of the atmosphere.

Twenty specimens of the disease among officers' horses and ponies, and among "gharry" (vehicle) horses, at Karachi and district, were obtained, and in every case the fungus was demonstrated by microscope and cultivation. In the dust from the floor of the stables in which were two very severe cases of the disease, the fungus was obtained by cultivation on agar-agar plates and on potatoes. The same result was produced with scrapings from the inside of the collar, and in one case from the inside of the head-collar.

From Hyderabad (Sind) specimens of this common skin disease in battery F/2, R.A., were obtained. Specimens from Jacobabad of cases in the 6th Bombay Cavalry were sent to me by Major Lucas. Specimens from the 7th Bombay Cavalry at Jacobabad, and from Quetta, were obtained later on, when visiting those stations. Mr. Appleton, A.V.D., kindly forwarded specimens from Kirkee (all these specimens were obtained by scraping the affected parts). In all these the fungus was shown by double methods. It was then concluded that it had an immediate connection with the disease, and it was realised that the treatment must be *anti-parasitic*. It was thought probable that if the fungus were destroyed the disease would cease, or be considerably modified.

The treatment at first adopted was, firstly, well washing the whole region of the affected skin with soft soap and water, and thoroughly drying with *clean* cloth; secondly, the application of a watery solution of corrosive sublimate (1 to 500) to the affected spots; but it was soon found that the solution was difficult to apply, on account of the sebaceous and endorifous excretions of the skin. Consequently, the use of an ointment of biniodide of mercury with soft soap (in the proportion of 5 grains to 1 ounce) suggested itself to me. Besides the above treatment, the bridlery

and harness were disinfected by carbolic acid or corrosive sublimate solutions ; the blankets, brushes, dusters, etc., were boiled. The floor of the stable was scraped (generally earthen floors in this country), and the fittings whitewashed. Particles of scurf from animals so treated failed to produce any growth when tried on various media. It was found that the diseased spots quickly disappeared, and a new crop of hair grew, though the irritation was temporarily increased by the action of the ointment, notwithstanding that great care was used in gently rubbing it with the end of the finger for a few seconds into the spot. It was also found that fresh disease appeared in the usual way on the parts between the spots so treated.

The increased irritation suggested the use of an ointment of sulphate of copper and soft soap (1 to 12), and this was applied every other day, after cleansing the skin, (alternate days, with the mercury ointment).

The outbreak of fresh spots suggested the use of the following antiseptic dressing :—

Oil of tar,	1 oz.	
„ petroleum,	4 oz.	
Sulphur,	2 oz.	
Common oil,	4 oz.	Misce.

This liniment was applied every day after the mercury or copper. It was slightly rubbed into the whole of the affected region of the skin, and therefore over and between the previous dressing. This treatment gave satisfaction, but it was noticed in some cases that a certain amount of pruritis remained. Such cases received a dose of physic and had low diet, for in them some constitutional disorder was generally traceable. It was then found that constitutional treatment assisted the local treatment. Low diet was given to all animals, and the cure of the disease was hastened.

Four cases of the disease were treated by a solution of iodine (instead of mercury); it was applied in the same way. Some other slight cases were cured by the application of the copper ointment alone (in proportion of 1 to 8, instead of 1 to 12), and it was ascertained that this ointment killed the fungus.

The thorough carrying out of the treatment given above cured all cases in from one month to six weeks. Attempts were made to produce the disease in healthy horses, by placing the pure fungus on the thinned epidemis or dermis, but all experiments failed in this direction, and it was thought probable that the fungus did not find a suitable *habitat* in the healthy skin.

I am of opinion that this disease of the skin is essentially of a

fungoid nature, and that the exciting cause is the *Tricophyton furfuracea*. It appears probable that the fungus requires a receptive state of the skin, which appears to be one of abnormal character, and is possibly produced by high feeding, poor feeding, want of exercise, accumulation of filth (as in public vehicle horses in this country), chills and other climatic influences, friction and chafing (as in axillæ and under harness), sudden changes of diet, indigestion, and any internal or external disease producing a weakened skin. It is very evident that any predisposing weakening cause operating on the skin should be removed, for it is shown by the benefit of hygienic local treatment, which tends to bring about a healthy state of the integument. Thus, good grooming is a *sine quâ non*, and regular and sufficient diet a necessity, when health is to be maintained. Even in Scabies the benefit of constitutional treatment is acknowledged. Both animal and vegetable parasites leave a certain amount of irritation of the skin, after they are apparently destroyed. Such pruritus is probably due to the foreign matter in the skin, caused by the breaking down of dead spores, cells, etc. Further investigation by inoculation will be made when opportunity offers itself, but attempts in healthy animals have hitherto failed.

On inquiry, I found that native grooms of horses, when these are affected with this disease, frequently suffer from a skin affection called Dhobie's Itch, or Burmese Itch (Chinese Ringworm, *Tinea Circinata*, *Eczema Marginata* of Hebra), which usually attacks man in the arm-pits and groin, and in other places where sweat, etc., are allowed to accumulate by uncleanly habits, and where the skin is thinnest and most liable to chafing. Deputy Surgeon-General Turnbull, Dr. Birrell, and other medical men inform me that Dhobie's Itch occurs only at certain seasons, and especially at certain stations in India. I am informed that this disease, Dhobie's Itch, does not attack the healthy skin, but requires a receptive, or more or less unhealthy state. I have been able to show to Deputy Surgeon-General Turnbull, several Army surgeons, Inspecting Veterinary-Surgeon Anderson, and other officers interested, the fungi of both Dhobie's Itch and the Indian Equine Skin Disease (*Tinea furfuracea*), and there is no doubt that these two fungi are identical in microscopical appearances. Moreover, on the artificial media at my disposal they grow identically, and I am therefore inclined to the opinion that the exciting causes of the two diseases are one and the same. This subject is still under investigation, as well as the experimenting with the fungus of Dhobie's Itch on the human body.

It might be objected by some that as *Tinea Circinata* is a disease of the more or less hairless parts of the human body, it is unlikely

to be caused by a fungus which attacks hairy parts of the horse in the form of *Tinea furfuracea*. The answer at present to such is the above identity of growth on the two artificial media at my disposal, and the analogous fact given by Dr. Tilbury Fox in the following words: "It (Dhobie's Itch, Indian Ringworm, *Tinea Circinata*) often co-exists with *Tinea Tonsurans* (ordinary Ringworm), and it can give rise to the latter by transmission to the scalp of its fungus-elements, or by its extension from the face or neck to hairy parts of the scalp." The disease, Dhobie's Itch, occurs in many places where there are no horses, as in infantry barracks, as also the equine disease where there is no Dhobie's Itch; but this does not preclude the possible communication from man to beast, or beast to man. Nor does the presence of one disease follow necessarily from the presence of the other, as it does not with much more contagious maladies which are communicable from beast to man. It is well known to medical men that Dhobie's Itch always attacks those parts of the body which are kept the least clean; the custom of the natives of going into the water with a certain amount of clothing on their bodies, and of not wiping those parts underneath afterwards, makes them very liable to the attack of the fungus. I am not aware that domestic animals have ever been suspected of being a possible source of the Dhobie's Itch fungus.

Dhobie's Itch, as described in Chevers's "Diseases of India," is stated to be frequent in Lower Bengal, and the clinical features of the affection given in that work apply almost equally to the equine disease. Like our disease, Dhobie's Itch has caused much contention in medical ranks. Cases have been called Eczema, Psoriasis, etc. Chevers states the following with regard to Dhobie's Itch: "Early in my career I failed entirely to cure, using sulphur and mercurial and ioduretted applications; but I repeatedly found that after resisting treatment for months, the eruption would suddenly disappear on a change of season, as from hot to cold or the reverse." I am much indebted to my friend Dr. William Palmer for the following judicious observations upon this disease: "It can be cured by any of the parasiticides, even by borax, but they must be applied intelligently, by persons who know anatomy etc. Our old friend — used to doubt its curability, and he was neither careless nor captious. How are such different opinions to be reconciled? If the affection of the skin depends upon a spore germinating within it, then every single spore, however deep it may have embedded itself, must be destroyed before the disease can be eradicated. . . . No sooner are the multitudes of germs in the surface layers destroyed than complete relief is felt; the remedies are discontinued, and after a

month or two a few germs in the deeper layers will have multiplied, and the disease be again as bad as ever. [Has not this occurred in veterinary practice?] The sanguine doctor who promised a cure will be called hard names, the patient will lose faith in the remedy, and after years the skin will have assumed that thickened, dense character where some skill, with an unusual amount of patience and perseverance, will be required to bring about a cure. I feel very certain, however, that a cure may be effected whenever the remedy is used with knowledge and faith." Dr. Chevers continues, "At Sir Joseph Fayrer's suggestion I used goa powder effectually. I had some experience of the good effects of a lotion prescribed by Dr. Joseph Ewart, of Brighton. The formula is R

Hydrarg. Bichlorid, grs. x.
Spts. Terebinth, $\frac{3}{4}$ ss.
„ Rectificat. $\frac{3}{4}$ ijss. Misce."

Doctor Ewart writes, "It completely relieves the itching, which in the hot weather and rains is so troublesome as to lead to much disturbed sleep and great irritation in the daytime, especially during even moderate exercise." But he adds, "At these seasons it is necessary to keep up the daily use of the liniment, often for weeks after the disease is apparently cured."

At the Karachi Military Station Hospital, goa powder is used to treat all cases of Dhobie's Itch, and these are generally discharged cured in fourteen days. Clothes, bedding, etc., are disinfected by boiling. I am informed that great care is necessary, otherwise the cases recur; indeed, they constantly do recur!

In speaking on the subject of treatment of Dhobie's Itch with Surgeon Birrell, A.M.S., he suggested my trying goa powder on my patients. Goa powder is described in the B. P. as the pulverised dried medulla of stem and branches of the *Andira araroba*. Its active principle is chrysophanic acid. The result of my experiments is that I consider it the best and cheapest of all remedies. I have employed it in the treatment of the Equine Skin Disease, and I am unaware of any poisonous effects ever having been noticed from its use. I am informed that chrysophanic acid is coming to be looked upon by the medical profession, at home and in India, as almost a specific for Psoriasis, and I have therefore to recommend its trial for that disease in our patients; the acid is given internally. The next case of skin disease that comes to my notice shall be treated internally by chrysophanic acid, for it is possible that its specific action may be of service in other diseases than Psoriasis. Goa powder made up into a thin paste with acetic acid is the very best remedy for *Tinea Furfuracea* of

horses, as it is also for Dhobie's Itch of man. The severest case of *Tinea Furfuracea* I have seen was cured by its help within one month—of course all other antiseptic and cleanly measures being adopted. The ointment is applied to the affected spots in the same way as the mercury ointment, care being taken not to rub it in too hard or too long, otherwise the skin becomes blistered.

I respectfully beg to introduce the use of goa powder and its active principle to the veterinary profession (I have not heard of its use by us before), and especially to recommend the powder for military veterinary pharmacies, and to state that its virtues are well known to the sister profession in India.

At the end of this essay is given a short *résumé* of the various stages of the treatment now adopted, and which, if thoroughly carried out, has always effected a perfect cure within one month at the outside.

Often in the skin disease of the horse the whole of the under surface of the body, from fore legs to sheath, is affected; its spread there is generally due to the skin having received the fungus from the floor of the affected stable. This portion of the skin is liable to be overlooked, and hence the recurrence of the disease. From the result of clinical observation and experiment, as well as from the experience of "old Indians," I am of opinion that the fungus is of a stationary character, that the sources are brush, duster, bridle, harness, floor of stable, etc., and that the source is very rarely atmospheric. This, together with the "receptive state" of the skin, to a great extent explains why the disease is so slightly contagious, and also explains the fact of its particular prevalence at certain seasons and stations. The fact of the source being non-atmospheric points out the necessity for thorough disinfection of all possible sources of the disease, and of whitewashing the stable afterwards, with a view to its prevention and cure.

The fact of its particular prevalence at certain seasons and stations is an argument which might be used by some against the fungoid nature of the disease; but it should be met by the fact of the fungus requiring those conditions of existence which are found during those seasons and in those stations. These conditions are probably heat and moisture combined, but how much of heat it is difficult to say. The fact of these definite conditions being necessary is one of the strongest arguments in favour of the fungoid nature of the disease and other similar diseases of man and animals, even had the fungus of the disease not being seen or isolated. In this case *Tricophyton furfuracea* is constantly present, and the fact of the disease being particularly prevalent at certain seasons and stations is a clinical feature which bears out its fungoid nature.

It is absolutely necessary that personal supervision over the treatment be constantly exercised. It must be remembered that everything coming into contact with the affected parts must be disinfected. Men will forget to disinfect their dusters and brushes daily; the remedies will be rubbed in for too long a time, and the animal blistered through sheer carelessness. In this climate an animal left out in the sun after the applications have been put on, will become blistered. It must be remembered that the remedies are severe ones, and also that upon the systematic and thorough treatment and disinfection success depends. Animals must be secured, to prevent scratching, rubbing, and biting, until the disease has disappeared and the effects have passed away. It is extraordinary how a carbolic washing alone, repeated daily, will take away the pruritus left by the disease.

I can, unfortunately, not lay claim to the discovery of any new remedy for this malady (the use of goa powder was suggested by Dr. Birrell). I thought I had been successful in Ung. Hyd. Iod. Rub., until Inspecting Veterinary Surgeon Anderson, A.V.D., informed me that he had used it "years ago." He told me that it cured his cases also, but that it nearly killed them, for, during his absence, his native farrier violently blistered the poor animals, to the disgust of every one in the station who saw them. I have fortunately had the assistance of a reliable farrier sergeant in carrying out the cure of this disease in the horses of the battery at this station, and hence have had no results of carelessness or ignorance. Again, the antiseptic liniment is not new; Principal Veterinary Surgeon Oliphant, of India, has, I understand, used petroleum with great success. Had the fungoid nature of this disease been positively known, I think we should have seen it very rarely in military veterinary practice. I feel certain that almost any antiseptic will effect a cure, if only *properly followed up* and all *sources* destroyed; always remembering the nature of the exciting cause, as would be the case for any other more contagious disease, or one of a fatal character. I am disposed to the opinion that much of the benefit of all antiseptic dressings in skin diseases is due to their action on fungi. It is curious that nearly all remedies of even at present termed "non-parasitic" forms of skin disease are antiseptics or disinfectants, and it is very suggestive as to how far their action depends on destroying micro-organisms. I think it probable that bacteriological investigation of other skin diseases, as well as of the non-pathogenic organisms of the skin, would teach us much that is now obscure. How many of the diseases of the skin are we really satisfied with the "pathology" of? and how many do we guess at the pathology of, and as a result treat empirically?

I believe it is the opinion of most of the veterinarians in India that the skin disease is a constitutional one, an "Eczema," "Prickly Heat," "Pityriasis," and is due more or less to diet, to climate, non-hygienic conditions, renal, hepatic, or splenic disorder, or other cause. All these are, in my opinion, predisposing causes; at the same time it is possible that frequently true Eczema, Prurigo, or other forms of skin disease are present with, and do complicate the disease under consideration. I remember finding Scabies associated with the disease in a case which had a notoriety for being "incurable," previous to the anti-parasitic treatment which was then adopted. From Mr. Adams's excellent papers I see that the fungoid nature of the disease has been suggested, and he makes reference to an article in the VETERINARY JOURNAL which drew his attention again to the subject. I have not seen the article in question, and I am not aware that it has before been attempted to establish the fungoid nature of the disorder. Mr. W. S. Adams states that he failed to find any trace of fungoid growth. I can only repeat that in *every* case examined—over a hundred and fifty from different parts of the Bombay and Bengal Presidencies—I have *never* failed to find the fungus in abundance. I beg to point out that I worked with a powerful microscope, using a $\frac{1}{4}$ -inch oil immersion lens, though an ordinary $\frac{1}{8}$ -inch objective is sufficient to demonstrate the fungus, and by methods (bacteriological) probably unknown to most veterinarians, and that I have had some little experience in bacteriological microscopy. I confess that I think we are all dealing with one and the same disease, and that my experience is *nil* compared with previous writers on the subject; but fortunately, the fact of the presence of the fungus is a question of fact of which any one in a position to do so can satisfy himself. It is positive that in all cases of the disease examined the presence of the fungus cannot be denied by proper observation. I feel sure that careful observation and experiment will verify this. It is logical to deduce that all other cases of the same disease have the same fungus. I am of opinion that the 500 or 600 cases which I have seen have all been cases of fungoid disease, and I am credibly informed that these cases are like other cases of the common Equine Skin Disease seen all over India. Inspecting Veterinary Surgeon Anderson, A.V.D., tells me that the fungoid character of the disease explains its clinical features, and he is of opinion, from his long experience of the disease in different parts of India, that the partial antiseptic treatment which has generally hitherto been adopted would, if only properly carried out, give satisfactory results. He agrees with me that the disease is fungoid.

I am of opinion that the good results obtained by Mr. W. S.

Adams, A.V.D., on horses fed on green food, are due to his bringing about an unsuitable *habitat* for the fungus, "by his changing" the animals to a dry forage diet, by "good grooming," "judicious sweating," and "carbolic soap dressings." I quite agree with that careful observer in treating the disease constitutionally, but I consider the much more essential treatment to be the local treatment, and think it is probable that his local treatment of "good grooming," occasional "sweating," "careful drying," and "carbolic soap washings" have had very much to do with his good results. I consider that they should be adopted whenever possible. It is certain, however, that the disease exists in corps where the horses have been fed continuously on dry forage for many months. In British troops, where I have seen the disease, the forage diet has been 15 lbs. of dry forage and 5 lbs. of green lucerne or guinea-grass; and this large quantity of green food I never felt justified in stopping. The field battery at Karachi, for the past three years, has received 15 lbs. of dry kurbie (*Andropogon sarghun*) and 5 lbs. of green lucerne daily, except for about two months, when 5 lbs. of green guinea-grass were substituted for the lucerne; and the skin disease has occurred every hot season, and disappeared on a change of season, for the three years referred to. This year, at Karachi, the outbreak was much greater than for the two previous years at Hyderabad, Sind; and this is, perhaps, explained by the climate being damper at the former place, and therefore more suitable for the growth of the fungus. At Kirkee, last year, three horses with the skin disease were given as much green forage (guinea-grass and lucerne) as they chose to eat, in addition to their corn, no dry forage being given; and other three with the skin disease were fed on dry forage in addition to corn. No other treatment, in the shape of extra grooming, sweating, or medical treatment, etc., was adopted to any of the six. At the end of two and a half months no detectable difference for the better or worse could be observed in those fed on dry forage; those fed on green forage appeared about the same as before, also. These six animals were obstinate cases of the disease, and they had, previous to the experiment, been fed on 15 lbs. dry, and 5 lbs. green forage per diem. At that time I did not know that Mr. Adams adopted local treatment, not having read his papers, and the experiment was carried out simply to see the result of the dieting (of which I had heard). It was concluded that local and other treatment was necessary in these cases, and also that possibly the experiment had not been carried out long enough. Regarding the constitutional treatment through the kidneys, and local blistering over these organs, as described by Mr. Burke, A.V.D., I have no experience, and do not think that any benefit whatever

can be derived from blistering in that region, in the disease under consideration.

The investigation of the disease has occupied most of my leisure time for the past seven or eight months, and the expense incurred has been trifling. I trust it may illustrate the benefit our profession may derive from the sister one, and I hope that it may also possibly render some assistance in return, by suggesting a source of a disease to the human subject which has, as far as I know, not before been suspected.

RESUME OF TREATMENT.

1. Good grooming ; general cleanliness.
 2. Washing affected region with soft soap ; dry the skin.
 3. Apply goa powder ointment on alternate days, with sulphate of copper ointment, to diseased spots.
 4. Apply the antiseptic liniment over affected region.
 5. Brushes, dusters, blankets, harness, etc., etc., to be disinfected.
 6. Stable floor and fittings to be disinfected and whitewashed, etc., etc.
-

THE USE AND ADMINISTRATION OF ANÆSTHETICS.

BY JOHN MOORE, M.R.C.V.S., MANCHESTER.

THE editorial remarks of Dr. Fleming in the last issue of the *Journal*, and the valuable testimony of Mr. Raymond, of the Army Veterinary Department, induce me to contribute an article on the veterinary use and administration of anæsthetics. I do not mean to enter into the physiological action of anæsthetics, nor the fundamental processes by which such action is established, but simply to confine myself to the more practical part—the use and administration. Ever since I became connected with the profession I have noted with feelings of shame and degradation the almost total disregard of the production of anæsthesia in painful and protracted operations. The majority of our operations we cannot designate scientific successes ; they are performed in cold blood, and many of them are veritable and revolting acts of cruelty and butchery. Take, for example, the excision of the metacarpal nerves in neurotomy, castration—especially by the torsion and *écraseur* methods—operations in *Dystochia* from different causes, or even the removal of a large tumour from the region of the shoulder. What man of us cannot but confess to the excruciating and unnecessary pain inflicted ? I think such cases render the use of an anæsthetic imperative. Of course, there are many operations of so simple and painless a nature that anæsthesia is uncalled for ; but, on the other hand, there are a great many where it is gross cruelty to

perform them without. Surely such proceedings cannot be the work of men endowed with a sense of feeling and humanity, of men of scientific training, and whose object is, or should be, the furtherance of their profession, both as a profession and in the estimation of the public.

What is the reason of this? Do we lack the means or ability? I think not. It is sad neglect. In his editorial Dr. Fleming remarks that "the chief reasons assigned for neglecting such beneficial means have been the long time required for producing anæsthesia, the large amount of the expensive drug needed for the purpose, the danger attending administration, and the time that elapsed before the patient recovered completely from the effect of the anæsthetic."

Taking this as my text, I purpose to chronicle a few facts, proved by experience: first, as regards the administration of an anæsthetic, the time necessary for producing anæsthesia, and the amount of drug used; and secondly, as regards the danger attending administration.

I. *Administration, etc.*—In heading my paper I have used the term anæsthetic, but my remarks will apply solely to chloroform, as I am fully convinced that as an anæsthetic it towers high above all others. No better is needed or can be found.

It has been held, and strictly enforced in all text-books as a rule to be followed, that a due admixture of air—set at twenty times the bulk—with chloroform is absolutely necessary. Experience, however, proves this rule to be not only absurd, but incorrect. The action of chloroform is manifested in two stages—1st, that of excitement; and 2nd, that of anæsthesia proper, during which operations are performed. Now, when a large amount of air is admitted, and this is especially demonstrable in anæsthis-ing the animal while in a standing position, and allowing it to fall down, the excitement stage is very much prolonged and intensified; the animal is often uncontrollable, and a considerable time is required before complete anæsthesia is established. On the other hand, give less air—in fact, admit as little as possible—and the result is that the excitement stage is very short, the animal perfectly manageable, and complete anæsthesia established in two minutes, or even less. Such was the experience of Mr. Richard Roberts, late of Kendal, who during my pupilage with him used chloroform very extensively and for all major operations. Mr. Roberts at first used a nose-bag with a perforated bottom, but finding the production of anæsthesia thus very protracted, and the excitement stage unnecessarily prolonged—a thing not to be desired in the case of unbroken colts for castration—he conceived the idea of administering the drug with less air, or with as little

as possible, and this was productive of the happiest results. Mr. Roberts's experience, the experiments demonstrated by him and Prof. W. O. Williams at the National Veterinary Association, three years ago, and the admirable corroborative evidence of Dr. Fleming and Mr. Raymond, to whom all praise is due, clearly shows that the admission of a large amount of air is not only unnecessary, but that to exclude the air as much as possible is *the* method of administering chloroform. Of course, it is impossible to exclude all the air; a little is necessary to suspend the chloroform. During my college career I fought many a battle for this view. It was flatly contradicted on all sides, by my fellow-students, as being totally inconsistent with reason and the views of acknowledged authorities, and I remember at one of the weekly meetings of our college veterinary medical society it was proposed that my views on chloroform should not be entertained. By this method, too, the quantity of drug required is very small, an ounce and a half sufficing to chloroform any horse and to maintain the anæsthesia for at least a quarter of an hour. The old method was productive of great waste, and the record of instances of large and even enormous quantities of the drug used suggest to my mind a want of proficiency in the art of administration, or an adherence to the old method. (One member, in a recent publication, acknowledges to giving the horse a bath in the anæsthetic. Being the ACE, it certainly takes the trick.) By using Mr. Carlisle's muzzle (Arnold's Improved, suggested by Mr. Raymond, I believe), or, failing that, an ordinary nose-bag with a pad round the top to fit over the nose, the operation is rendered very simple. The drug is not expensive, being about 1s. 10d. per lb., and the cost of chloroforming a horse is thus about 2d. Cattle are easier anæsthesised than horses, one ounce being often sufficient.

II. *Danger attending Administration.*—The apprehension of danger seems to be the main reason why anæsthetics are not in more general use. Operators are fearful of untoward results, perhaps the death of the subject. Such untoward results are more fanciful than real. By the inhalation of chloroform our large animals, horses and cattle, with the large vital capacity of their lungs, the usually healthy and strong condition of their hearts, and the strong action of their respiratory muscles, are not so readily killed as is imagined. I have had ample opportunity for observing this, and have on several occasions endeavoured, by the influence of chloroform inhaled by means of a muzzle, to destroy horses, but hitherto my endeavours have been futile. During my pupilage with Mr. Roberts, we were often requested to destroy old

favourite horses by that means, and after half or three-quarters of an hour's earnest chloroforming, we usually had to resort to pithing. Another case in point is an experimental one by myself, expressly for this paper. My subject was a mare suffering from Diseased Liver (softening) and Ulcerated Stomach (as shown by *post-mortem* examination). She had practically eaten nothing for a month or more, was very emaciated and weak, and being unable to rise, was ordered to be destroyed. I administered an ounce and a half of chloroform every quarter of an hour for an hour and a half, and finding at the end of that time that she possessed a fairly full pulse, and which was maintained throughout, I destroyed her by pithing, not, however, before she began to show signs of returning consciousness. The *post-mortem* examination showed no congestion of the lungs or bronchial irritation. The late Prof. Robertson, at the London College, I am informed, experienced the same result in an animal affected with Valvular Disease of the Heart (probably not far advanced). I am satisfied that these cases prove that untoward results, or, in other words, death in our large patients, from the inhalation of chloroform exist more in the imagination than in reality, and that we need apprehend no danger from its use. In speaking thus I do not for one moment advocate the careless use of it. We, as surgeons, should exercise every care. The object to be aimed at is the quick and easy production of a state of unconsciousness, and the maintenance of that state for an indefinite period, without taxing the different vital functions by an unnecessary amount of drug, carelessly given.

The time elapsing before consciousness is regained depends on the length of time the animal is allowed to inhale the drug, the amount, and the quality of it. In performing an operation which will require a given time it is not necessary for the animal to inhale it *all* that time, but the muzzle ought to be taken off a short period before the conclusion of the operation. Again, when an animal is put completely under the influence of the chloroform it is not necessary that it should be breathed to the same proportionate extent as at first, but only so much as will maintain the anæsthesia. This can be accomplished by undoing the nose-band of the muzzle or bag, and allowing the admixture of more air.

The chloroform I use, and I can highly recommend it, is manufactured by Duncan, Flockhart, and Co., Edinburgh (from methylated alcohol).

In conclusion, I earnestly urge members of the profession to become possessed of a Carlisle's muzzle or an ordinary nose-bag, and give to chloroform a trial, if they have not already done

so ; and I feel convinced that it will speak for itself, and with a single trial a more extended and general use will follow. No preparation is necessary beyond keeping the animal without food and water the night previous, as is usually done for all operations, and the administration becomes so easy, and is so devoid of danger, that operators can perform it without need of an assistant.

REMARKS ON FIRING.

BY T. FLINTOFF, V.S., 5TH DRAGOON GUARDS.

THE ordinary methods of treating badly sprained ligaments and tendons in race-horses, hunters, and horses used for fast work are so very unsatisfactory and ineffectual, that I venture to suggest we should, so far as opportunities offer, try the puncture firing on badly sprained and partially ruptured tendons and ligamentous structures occurring below the knee and hock joints.

Recently I have adopted, in a limited number of cases, this system of treatment, and so far as I can at present judge, with far better results than by the ordinary methods of transverse and feather firing. A fine-pointed iron is preferable in performing this operation, and I endeavour, as far as it is possible to calculate, to allow the iron to pass through the skin, but nothing more, with the immediate result that a certain amount of hæmorrhage, as well as a slight discharge of synovia from the lubricating surface of the sheath of the tendon, takes place from most of the impressions made by the hot iron (that is, when firing over the course of the back tendon only). Many of the readers of this article will doubtless argue that to fire a structure like the perforans tendon in this way will have the effect of destroying the elasticity of the tendon, by causing adhesion of it and its sheath to the skin covering it, which to a great extent I suppose really occurs ; but my own idea is opposed to this as view, I think the new adhesions which are likely to take place between the tendon and its sheath with the skin are a source of strength, although probably they do limit in extent the gliding movement of the tendon in its sheath ; but having probably numerous small attachments to the sheath and common integument, which is also thickened and strengthened by the firing, the tendon is less in danger of being sprained a second time than it would be by any other system of treatment that does not cause these new attachments to be formed. The effect of this mode of firing for sprain of the suspensory and check ligaments, and severe sprains of the capsular and other ligaments in connec-

tion with the fetlock joints, must of necessity be more effective, on account of its severity, than the other methods of firing, and I would strongly advocate its more general practice than is at present observed. I think it is always necessary to apply a blister of full strength over the newly fired surface, as is generally done after the operation; and the limb or limbs should be blistered over the parts affected twice afterwards, at as short intervals as possible, with a blister twice the ordinary strength, and applied for at least three-quarters of an hour each time. I have never known a blemish to result from a blister of this strength on the lower part of the limbs, provided care has been taken not to allow the patient to rub or interfere with the parts in any way.

DO BOVINES PERSPIRE?

BY H. GRAY, M.R.C.V.S., STRATFORD.

IN Mr. Brett's communication, contained in the last issue of the JOURNAL, criticising Mr. Thomas's pathology of parturient apoplexy, he asks the question, "Can a cow sweat? and has Mr. Thomas ever met with sudoriparous glands in the cow's skin?"

I can assure Mr. Brett that not only do bovines perspire, but they have sudoriparous glands in the skin. Perspiration is occasionally seen in cases of Parturient Apoplexy and in other diseases of bovines; it is also seen in healthy cattle, when they are packed together in close-covered yards in winter, when they are being fattened, and farmers look upon it as a favourable sign that they are doing well.

BLACK-LEG IN CATTLE ABOVE TWO YEARS OF AGE.

BY THE SAME.

It is a prevailing idea among stock-owners and the members of the profession that Black-leg never attacks cattle above the age of two years. Authorities seem to agree that it does not attack animals above this age.

Professor Brown, on page 22 of his "Notes of Lectures," etc., says that it "occurs in young cattle from a few weeks to a year old, and rarely up to two years." Professor Williams, on page 304 of his work on "Veterinary Medicine" (fourth edition), states that "it occurs usually in young animals under eighteen months or two years." In a letter to me on the subject, in January, 1887, the late Professor Robertson said that he could

not remember ever encountering a case in cattle above two years of age.

During the winter of 1886-1887 Black-leg seemed to rage as an epizootic, scarcely leaving a farm untouched in some districts, attacking calves that were in a poor condition equally with the thriving ones. One farmer lost six head of cattle from this disease within three weeks. One was a calf, ten weeks old; four were yearlings; and the other was an apparently healthy cow, aged three years and eight months. It had only calved its second calf a week previous to being affected. The left hind leg was enlarged tremendously. It died on the third day. A few weeks after this case I witnessed the complaint in a three-year-old bullock; the crepitating swelling extended along the back and left quarter as far as the stifle. There was tympanitis. It died within twenty-four hours after being noticed amiss. The same winter a case occurred in the practice of Mr. J. C. Green, of Alfreton; the subject was a five-year-old cow. Both hind legs were badly affected, death resulting in a few days.

ANTHRAX IN A HORSE.

BY T. MARRIOTT, M.R.C.V.S., A.V.D., SIALKOTE, INDIA.

TROOP-HORSE B. 59, 2nd Dragoon Guards.—Fever, Anthrax. Admitted to hospital September 7th, at 6.30 a.m., exhibiting the following symptoms: temperature, 104° ; pulse, 68, and firm; respirations, 16; membranes yellow, but quite free from petechial spots; submaxillary lymphatic glands tumefied, and slight swelling around the larynx. Microscopical examination of the blood failed to reveal the presence of bacterial rods or spores. During the day the temperature rose to 107° , pulse to 70, and respirations to 20. Swelling gradually increasing, and extending forwards to the sternum; a faint "roar" accompanies each expiration. Membranes still free from claret-coloured spots; no discharge from the nostrils, and neither rods nor spores visible in the blood.

September 8th.—Temperature, 105° ; pulse 60, and less tone; respirations, 18. Profuse citron-coloured discharge from the nostrils, swelling extending towards the chin, somewhat less around the larynx. A few rods and spores visible in the blood.

3 p.m.—Temperature, 106.4° . The temperature began to decrease gradually, and the pulse to increase in frequency.

7 p.m.—Auscultation reveals the presence of pleuritic effusion; respirations increased and sonorous.

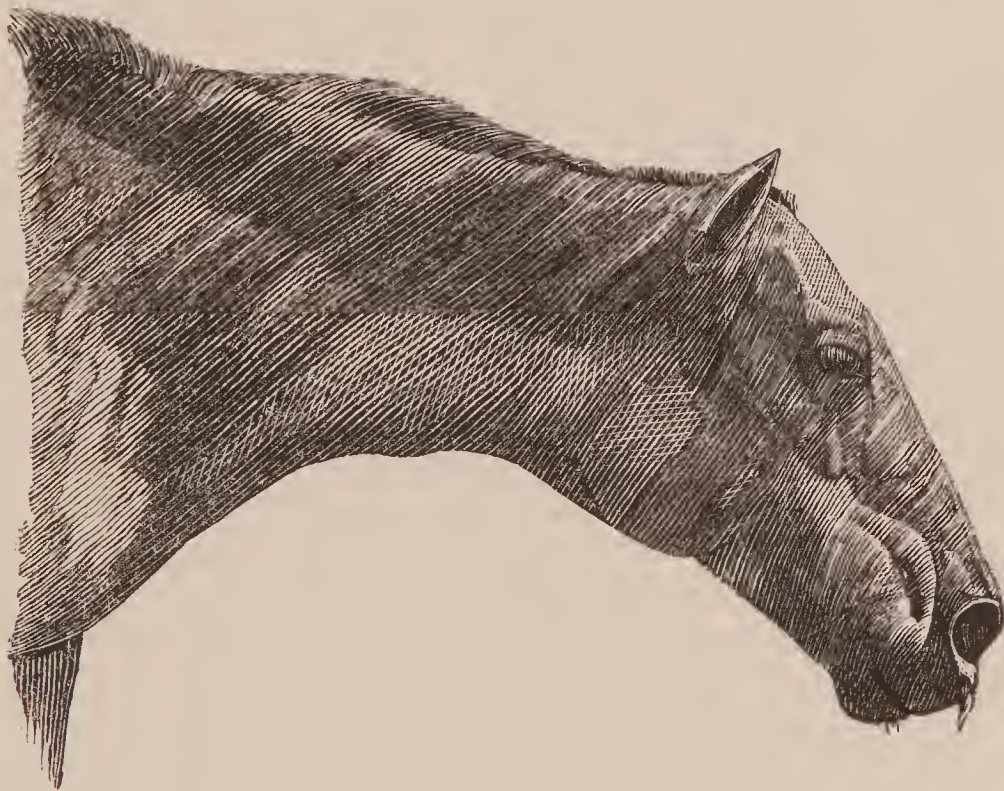
11 p.m.—Patient appears uneasy; lies down for a few minutes, then gets up again. This uneasiness passed off in about half an hour.

September 9th, 4 a.m.—Temperature, 103° ; pulseless; respirations 20, shallow and laboured, owing to excessive pleuritic effusion; swelling extending up the side of the face.

10 a.m.—Temperature, 102.8° . Sounds of the heart 96, and indistinct; respirations, 20; profuse discharge of citron-coloured serum from the nostrils, mixed with blood. Extremities cold.

12 noon.—Died.

Post-mortem appearances.—An extensive deposit of firmly



coagulated straw-coloured lymph from the chin to the sternum. Thoracic cavity and pericardial sac contained a quantity of reddish-yellow serum; lungs œdematous; bronchial tubes partially filled with frothy citron-coloured mucus, intermixed with blood. Peritoneal cavity contained a small quantity of reddish-yellow serum. Innumerable claret-coloured spots beneath the parietal peritoneum, varying in size from a pin's head to a grain of gram. Rods and spores of the *Bacillus anthracis* found in the blood, serum, mucus, splenic pulp, and petechial spots.

The accompanying photograph was taken two hours before death.

ENLARGED SPLEEN.

BY W. A. CLIFFORD, M.R.C.V.S., STAPLECROSS.

As in the last issue of the VETERINARY JOURNAL I noticed that Mr. Macgillivray chronicles the event of having had a case of an enlargement of the spleen to the extent of 23 lbs., which he considers to be the largest ever found in the horse, I forward an account of a case that came under my observation last summer, in which the spleen weighed $45\frac{3}{4}$ lbs.

The subject was a grey gelding, the property of Mr. A. Cheesman, of Sandhurst, Kent, who sought my advice regarding a long-standing case of Melanosis of the tail, the tumour having become very large, and, through friction, had ulcerated, and was discharging at intervals a considerable amount of blood, accompanied by a very offensive smell. As the horse was old and the owner would not consent to have the tail amputated, the animal was destroyed. On opening him, I was sent for, the foreman stating he had found a large black object, and would like to know what it was. The object proved to be the spleen enormously enlarged, but still retaining its usual position and sickle shape. It was covered with growths varying in size from that of a walnut to a large egg, some being distinctly circumscribed and others completely encapsuled. On cutting into them they were found to contain granules of black-coloured pigment, some being of softer constituents than others, and probably being of secondary formation. The spleen pulp, instead of containing the usual reddish matter, was of intense blackness. The liver, lungs, and subcutaneous tissues also contained tumours varying in size, which had probably been disseminated by the blood-vessels. The bronchial lymphatics were likewise largely invaded, and even the brain and its meninges contained several black tumours about the size of peas. An interesting fact in this case is that, when I saw the horse, he looked in perfect health, and the carter, who had attended him for years, stated that he never had a day's illness since he looked after him, although at times he was a little sluggish in his work.

Editorial.

THE EXTINCTION OF CONTAGIOUS PLEURO-PNEUMONIA.

THERE are signs that the Government will soon be compelled to take more energetic action than it has done heretofore, in getting rid of that insidious bovine scourge, Contagious Pleuro-pneumonia, and that its extinction will become, not a local, but an Imperial matter. It has long been evident that, unless this is recognised and acted upon, the disease will probably never be got rid of. Though it is now confined to a few centres, yet, for want of general and energetic measures throughout the United Kingdom, it defies eradication, and is ever ready to extend itself far and wide when local authorities are indifferent or stupid. In one county these may be most zealous and thoroughgoing in their efforts to stamp out the contagion and to keep it beyond their borders, but in the adjoining ones they may be just as careless or perfunctory; consequently, the energetic and enlightened county finds all its vigilance and labour, and perhaps heavy expenses in addition, of no avail in maintaining a clean bill of health, and so loses heart. There can scarcely be a doubt, then, that carefully devised and rigidly enforced measures should be a matter for the Central Authority in London to deal with, and that compensation for losses incurred by individuals in getting rid of what is, after all, a national misfortune, and the extinction of which will prove a national benefit, should be the affair of the nation. Localised as the scourge now is in only a few places, the cost attending such an effort to have done with it altogether ought not to be a very serious consideration. The absence of such compensation has probably had a good deal to do with the continuance of the disease in the country for so many years, when it ought to have been unseen and unfelt long ago. Though the system of national compensation for the stamping out of such diseases is liable to abuse, yet in view of the greater evils which accompany the present disjointed and half-hearted attempts to grapple with such an enemy, there appears to be no other course open.

It is to be feared that Contagious Pleuro-pneumonia is not the only malady of this class which will demand the active interposition of Government in the way proposed, Tuberculosis being a far more serious calamity; while Swine Plague appears to be altogether beyond the understanding and control of Local Governments, and is a veritable depopulator of piggeries.

THE PTOMAINES OF RABIES.

PROFESSOR VASILY K. ANREP, of St. Petersburg, says that he has succeeded in isolating from the brain and medulla oblongata of rabbits suffering from a violent form of Rabies, a ptomaine possessing extremely poisonous properties. The ptomaine was obtained by applying Brieger's methods, and is a distinct crystallisable body with a constant chemical formula; its platinum salt contains more than 30 per cent. of the metal. One hundred and twenty grains

yielded about 0.065 gramme of the ptomaine. When injected under the skin (in rabbits) in minute quantities, it gave rise to the ordinary symptoms observed in the earlier stages of violent Hydrophobia, while in larger doses ($\frac{1}{2}$ milligramme or more) it caused all the phenomena occurring in the later periods of the disease, such as extreme restlessness, a rapid rise of the temperature to 40° C., which was of short duration, acceleration of the cardiac action, difficult breathing, decrease in tonicity of the pneumogastric nerves, and finally, collapse, convulsions, and death. Excision of one kidney accelerated the fatal result. A gradual habituation of the animal with small quantities of the ptomaine produced a certain degree of immunity.

NATURAL IMMUNITY FROM SHEEP-POX OF BRETON SHEEP.

PROFESSOR CHAUVEAU long ago demonstrated the fact that Algerian sheep were proof against Anthrax inoculation, and now Professor Nocard, Director of the Alfort Veterinary School, makes the same claim for the Breton sheep with respect to Sheep-pox. These animals are of small size and have black wool. Nocard inoculated ten of them with sheep-pox virus, which was introduced beneath the skin and into the trachea, but they remained unaffected, not the slightest pustule appearing. At the same time a number of Southdown sheep were inoculated, and all had subsequently the characteristic eruption. Variola ovina is not known in Brittany, and therefore the sheep could not have been previously affected with the disease.

THE PREVENTION OF EPIZOÖTIC ABORTION.

PROFESSOR NOCARD, of the Alfort Veterinary School, who has made the study of epizootic abortion in cattle a specialty, formulates the following measures for its prevention:—

(a) Every week the cowshed floor should be thoroughly cleansed (if unpaved, the soil should be scraped), and sprinkled with a solution of sulphate of copper, forty grammes to the litre of water.

(b) The individual treatment of the cows is more complex, and should consist of:—

1. Vigorous vaginal injections, with a horse enema syringe, of the following fluid, which ought to be tepid.

Distilled or rain water	.....	20 litres
Glycerine	}	of each 50 grammes
Alcohol at 36°		
Bichloride of mercury	.....	5 grammes

Dissolve the mercury in the alcohol and glycerine, mix them thoroughly with the water, and keep the fluid in a wooden vessel, away from animals and children.

2. Every morning, when cleaning the cows, with a sponge dipped in the fluid, carefully dress the vulva, anus, and anterior surface of the tail of all of them.

3. When a cow aborts, she should be delivered at once by hand, and the foetus and its envelopes immersed in boiling water or destroyed by fire. The uterine cavity should then be irrigated with eight or ten litres of the above fluid, by means of a long piece of india-rubber tubing passed into the organ by the hand.

The intra-vaginal or intra-uterine injection always causes, especially in young cows, apparently violent expulsive efforts, but these, in reality, do no harm.

As for the cows in which the contagium has already reached the interior of

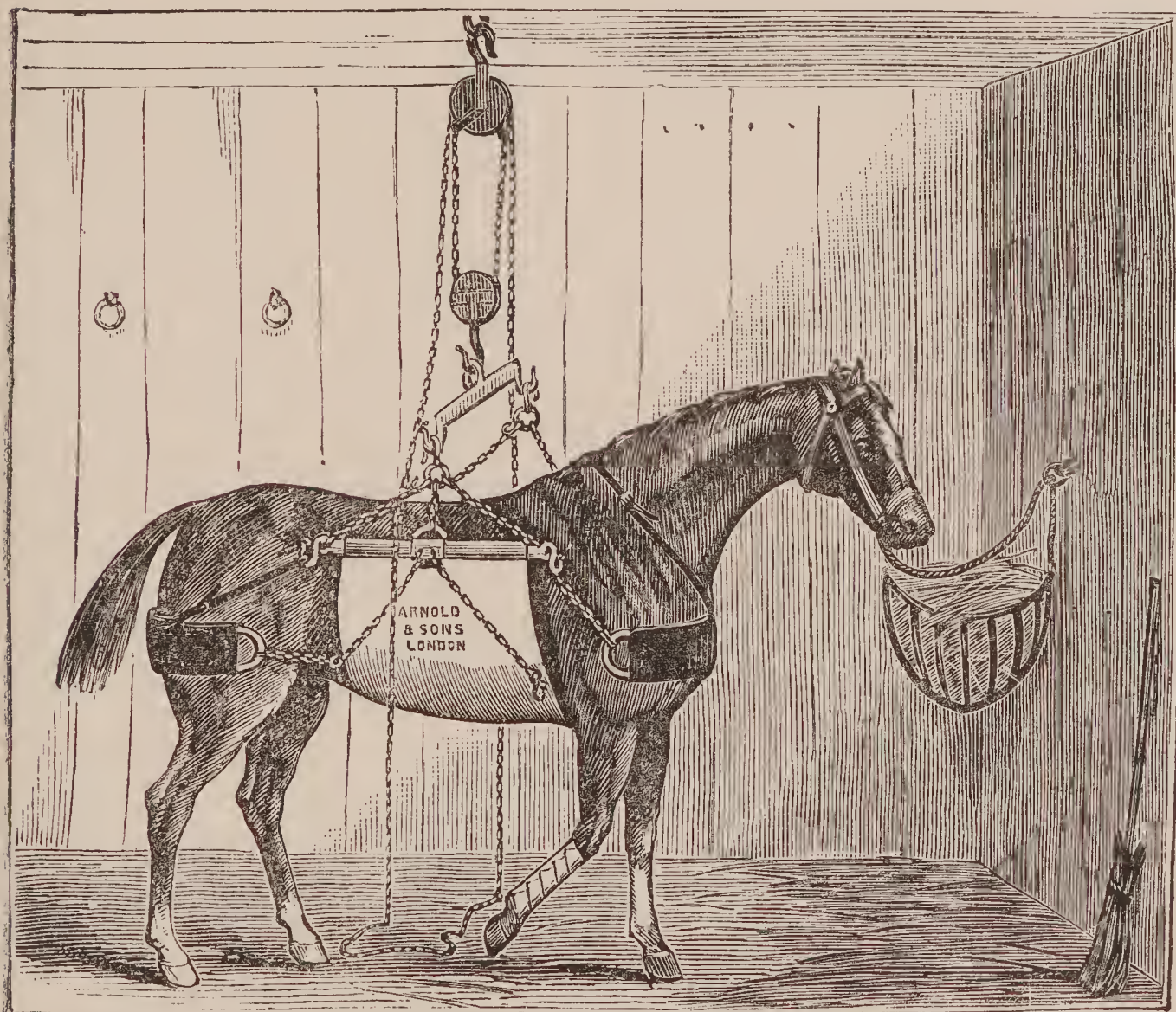
the uterus, nothing can be done. The treatment does not produce any good effects until the second year. In the first year there are always some abortions, though they are less numerous.

Nocard has obtained the best results from the employment of this method, and he is of opinion that a single vaginal injection, given at the commencement of the treatment, will establish asepsis, but only when the daily sponging of the vulva, anus, and tail is strictly carried out.

IMPROVED HORSE SLINGS.

EVERY one who has taken notice of a horse hung up in an old-fashioned sling, must have felt that if the poor brute could be put into a more comfortable position he would have a better chance of recovery.

In a new sling which Messrs. Arnold and Sons has manufactured in accordance with my ideas, many of the old defects are entirely done away with.



The chain block and tackle is, of course, the *sine qua non* in the arrangement, as it enables two men not only to manage the heaviest horse, but to raise him off the ground. The cross-bar prevents crushing the animal, and the side-bars distribute the bearing. The webbing is reversible; by this arrangement it is immaterial which end is in front, a consideration in the hurry of the moment.

Both breeching and breast collar are attached by means of hooks and

chains to the ends of the side-bars. Hooks are more readily adjusted than straps; they do not become unsafe by the perspiration rotting and sticking them, or the tongue of the buckle tearing out, as in the straps. And the strain is directed straight to the cross-bar.

Thus, when the horse lets his legs go from under him and sinks into the slings, he is not cut into, as in the old slings, but the weight is distributed, most of it being divided between the webbing and the breeching. The webbing cants to an angle which fits the contour of the abdomen, and the breeching, kept up by the straps which go from it to the cross-bar, prevents the animal slipping out backwards.

All the ironwork is galvanised, and therefore does not rust, and all the hooks have rings in their noses to prevent them becoming unfastened.

J. H. WILSON, M.R.C.V.S., Newbury.

RESULTS OF OPERATION FOR ROARING.

OPERATION for the cure of Roaring having now been practised upon a number of Army horses at Woolwich for a considerable time, it will doubtless prove interesting to the profession to have a report upon the results, so far as they can be safely dealt with at present. The first batch of horses operated on consisted of seven belonging to the 5th Lancers, then at Aldershot. They were of various ages, and sound in their limbs; but they all "roared," and were so much distressed in their breathing, on exertion, that they were pronounced unfit for further military service by Veterinary Surgeon Savage, and were consequently entered for sale. After undergoing operation at Woolwich, and the external wound having closed, they joined their regiment at Shorncliffe. There they had walking and trotting exercise for some time, and were finally tested as to their condition by being subjected to a severe two-miles gallop, in the presence of Veterinary Surgeons Savage and Longhurst. Only one horse made a slight "thick-winded" noise, but was in no way distressed; they were all pronounced fit for duty, and have been working in the ranks ever since. A horse belonging to the Royal Artillery, an extreme case of Roaring, operated upon rather earlier, and another of the Army Service Corps, also a bad case, have been for some time at work. One officer's charger, useless before operation, is now ridden every day, and makes no noise. All the other cases operated upon since these were taken in hand, are doing well, but a sufficient time has not yet elapsed to give a decided opinion as to the permanency of the cure in them. In another month this will be possible.

Up to the present time, nearly one hundred horses have been subjected to operation at Woolwich, and, as Veterinary Surgeon Lees has operated on nineteen in Ireland, the number is becoming considerable. There are many more to be done within a few months. No mishap of any kind has occurred, and the cases recently subjected to operation bid fair to be successful in result.

It may be noted that the horses operated upon have not been selected cases; all were so badly affected as to be unfit for military service, and age has made no difference. So long as their legs and feet were good, they were considered worth the trial of a "cure."

In the case of the 5th Lancers horses, the precaution was taken to have the veterinary officer who knew all about them, before and after the operation, examine them, and to have his opinion endorsed by another veterinary officer, the final test imposed upon the animals being a severe one.

The course adopted will, it must be admitted, compare favourably with that pursued by Mr. Clarke, of Redhill, who operated upon two horses, presum-

ably roarers, killed them possibly when he imagined he had cured them (the Irishman kills his pig to cure it), to discover whether they were really cured, thinks the story good enough for the Marines, tells it to them (*vide Naval and Military Gazette* for August, 1888), and then begins abusing the operation as practised on Army horses, as well as its introducer, in a manner which should entitle him to the Freedom of Billingsgate and the admiration of its refined denizens. Surely his own profession has claims upon him; the veterinary profession has not. We need medical men of quite another calibre to assist us, if assistance be required.

R.C.V.S. EXAMINATIONS.

WE are requested to state that Mr. G. Jarrat, of the Dick Veterinary College, passed with great credit in class A, at last December's examinations.

THE FITZWYGRAM PRIZES.

WE have to announce that Lieutenant-General Sir F. Fitzwygram, Bart., offers the same prizes to veterinary students as in previous years, and that the conditions of competition will be the same as those of last year.

THE VALUE OF DATES.

IN support of the statements made in the "Vindication," in the last number of the *Journal* (p. 112), and in order still further to refute the mendacious and calumnious assertions made by Mr. Dollar (J. A. W.), with regard to operation for Roaring, and the unfounded charge made by Mr. Jones (of Leicester), the following paragraph is extracted from the Annual Report and Statistical Returns of the Army Veterinary Department for 1887 (p. 7): "For the morbid condition which causes Roaring, 61 horses were cast (5·27 per cent.), more than 20 less than in 1886. Attempts are now being made to abolish this cause of inefficiency by an operation on the larynx, which I have introduced, and which I have reason to hope will be successful. If so, it will prove a boon of much value, not only to our mounted corps, but to breeders and owners of horses generally." A considerable time before this report was issued (January 20th) the Principal Veterinary Surgeon visited Aldershot, for the purpose of having two horses operated upon, the operator being Professor Smith, assisted by Veterinary Surgeon Poyser; and Inspecting Veterinary Surgeon Walters and several veterinary officers were present.

To further show the ignorance and malice of Mr. Dollar (J. A. W.), in *The Standard* of October 12th, he writes that Professor John Gamgee performed the operation in 1886-7, and also Professor Müller; and addressing the editor of that paper, he adds, "Through your own columns and those of your contemporaries, he (Dr. Fleming) eulogised his method of cure, and promised a record of further successful cases." It is needless to state that the latter sentence is wholly and entirely untrue, and was formally contradicted in *The Standard* of the following day. It was also pointed out that no one of the name of Müller had ever performed such an operation. That this name and the date of Gamgee's supposed operation were not misprints, is proved by Mr. Dollar giving them exactly in the same way in *The Star*, for October 10th. More unfounded statements from him appear in that paper, but these are not worth noticing at present. It may be remarked that, until a

short time ago, Mr. Dollar (J. A. W.) appeared to know as little of the subject as Mr. Jones, though he made up for this deficiency by audacity and disregard of facts; these, seemingly the outcome of a peculiar idiosyncrasy which seems to be a *hereditas damnosa*, characterise his effusions on Roaring, and by them only is he known to the profession at present. He is a very young and evidently inexperienced member, so let us hope he may be spared to recognise the value of truth and dates, and to learn something of a subject before he ventures to give an opinion upon it.

ON THE LATELY DEMONSTRATED BLOOD-CONTAMINATION AND INFECTIVE DISEASE OF THE RAT AND OF EQUINES IN INDIA.

BY H. VANDYKE CARTER, M.D.LOND., BRIGADE SURGEON, BOMBAY.

IN July, 1877, the late lamented T. R. Lewis, soon after visiting Bombay to see the then newly found relapsing fever organism of man—Obermeier's blood spirillum—made the observation, also novel here, that the blood of seemingly healthy rats often contains a "flagellate organism" which at first sight was not dissimilar to a spirillum. Towards the close of 1880 Dr. Griffith Evans, A.V.D., whilst investigating in the Punjab frontier the equine disease known as "Surra" (a wasting disorder), made the further discovery that the blood of affected horses contained a specific parasite, which Dr. Lewis then identified as being very closely allied to the flagellated parasite of the rat; and by experiment Dr. Evans showed that the "Surra" contamination and disease were both communicable through inoculation to healthy horses and also to the dog. In January, 1885, Mr. J. H. Steel, A.V.D., when investigating a hitherto unrecognised disease amongst the transport mules in British Burma, found it to be the same as the "Surra" of the north-west provinces, and was further led to regard the specific organism as a "spirilloid," and the malady as a fever of relapsing type. Mr. Steel also showed that the monkey was susceptible of this infection, and at Dr. Evans's suggestion, having applied to me for some technical information, he was good enough to send from Burma to Bombay several specimens of the tainted blood of mule, dog, and monkey, through means of which, by direct comparison, I too was enabled to identify the hæmatozoon of "Surra" with that of healthy-looking rats; and the subject being an interesting one, I continued to pursue it at leisure during 1885. My notes at that time were generally confirmative of prior morphological observations, including Lewis's latest published memorandum in the *Quarterly Journal of Microscopical Science*, July, 1884 (which I had not then seen in India); and they also contain figures anticipating some quite recently given by Dr. E. M. Crookshank (*Journal of the Royal Microscopical Society*, under date November, 1886), who, in England, having examined Dr. Evans's specimens of the equine "Surra" blood, and of the tainted rats' blood procured in London, considers the hæmatozoon in both to be identical in character and in more detail to belong to the genus *Trichomonas* of Leukart. It therefore appears that not only is the morbid equine hæmatozoon of the Punjab the same as that of Burma (Poona, in the Deccan, may now be added, according to Mr. Steel), but also that both of them correspond to the hæmatozoon of rats at large in Calcutta and Bombay, and, moreover, to a like organism common in London rats. I will only add here that in India the camel may spontaneously suffer along with horses and mules; also that in Europe, with rats, the hamster may be thus contaminated, and certain fishes (the mud-fish and carp) with organisms not unlike.

Data from Bombay.—These include observations and experiments made

with fresh material derived from rodents (*a*), and a short account of Mr. Steel's equine and other specimens from Burma (*b*).

(*a*) *Observations on Rats' Blood.*—Animals obtained were chiefly of the species *Mus. decumanus* and *M. rattus* (?), the small brown or grey rat being oftenest found infected. A few examples examined of *M. bandicottus* and of *Sorex* species (also of mice) gave negative results. Males were the most numerous; in pregnant females the foetus was not implicated. The animals were active, non-febrile, and barring injuries incidental to capture, all seemed alike healthy, so that one could not surely guess beforehand the state of their blood. Material for scrutiny was taken from root of tail or from the paws by puncture after cleaning: only a small-sized drop could be had daily, and the admixture of some impurities was unavoidable by this method. For inoculation and peritoneal injections blood from the heart was used. A magnifying power of 300 linear commonly sufficed, but the higher powers were used, and repeated scrutinies made when doubt existed; on such rarer occasions I have detected the *Trichomonas* in sealed specimens only on later trials, the number present being then extremely few. The animals were kept usually apart, and fed on wheaten bread, rice, and water *ad libitum*. Most were killed after examination; others preserved might survive for weeks or over a month, but most of them died at a much earlier period, apparently from the effects of confinement, or possibly as the result of injuries received. The temperature was taken twice or thrice daily *per rectum*, and usually in control-animals as well as those under experiment. From 99° F. a.m. to 101° p.m. (37·3°—38·4° C.) seemed to be the common range under conditions stated; but degrees somewhat higher and lower were occasionally noted, attributable perhaps to excitement or exhaustion.

Of 60 rats caught in February, 9 (or 15 per cent.) showed the *Trichomonas*; their source was various rooms in a large hotel, and the infected commonly came in groups of two or three from one room, which might be on an upper floor. Of 150 rats caught in August to December, only 16 (barely 10 per cent.) were found infected; their source was, however, more varied, namely, from dwellings or warehouses in several parts of the native town; and as only individuals were often brought, the evidence of an endemic source of infection was here less apparent, and valid inference regarding a possible seasonal influence could not be made. At the hotel alluded to the rats had finally become too wary to enter the traps, but some infected animals from the kitchens were caught together. Inclusive proportion showing the hæmatozoon, nearly 12 per cent., which is less than one-half of the percentage found in Calcutta and London.

A scrutiny of selected bi-daily records for 65 days did not reveal any pronounced or constant differences in the rectal temperature of infected rats as compared with the non-infected. And when it happened that the monads disappeared suddenly from the blood there was never noted any striking corresponding change of temperature; indeed, as the charts I have shown, no change at all might ensue surpassing the normal range so far as known. Possibly under greater stringency some relationship of body-heat and this parasitism of the blood may be revealed, but none such has yet come to light.

I also failed to perceive any marked difference in the general state of the two sets of animals compared; both being equally liable to inconveniences or incidental hurt, either flourished or did not thrive in similar degree, for periods of several days or some weeks. If these data were not very numerous or rigidly exact, it was still clearly ascertained that the aspect of complete health was compatible with the presence of numerous flagellate organisms in the circulation. There was no evidence of a contagious influence.

A common lesion amongst animals kept was atrophy or necrosis of the tail, then usually the feet became swollen, and finally there were signs of para-

plegia and extreme debility. No animal kept in confinement lived longer than six weeks, and the majority not more than a fortnight, death usually supervening gradually as if from exhaustion, and a terminal febrile state never being witnessed. Mere confinement seemed prejudicial; and even if the diet were unsuitable the signs of actual starvation were not noted. Occasionally death was sudden and unsuspected, during the night, and as it spontaneous. All these events were common to infected and non-infected animals, about equally.

Fifteen special autopsies were made, of which nine were of rats showing the hæmatozoon, and in none of them did I see any peculiar coarse lesion of blood or of viscera or tissues of the trunk. The brain was not examined. Microscopically, the only change noted was an increase of leucocytes; the spleen elements seemed normal. Some details are the following, which may be useful to future observers:—

No. 1.—A large and active rat, with swarms of monads in the blood; strangled, and forthwith opened. The blood reddens and quickly sets; no marked changes anywhere visible; liver-tissue healthy and free from ova or hydatid. No intestinal entozoa; some hyperæmia of mucosa in ileum and clear mucus near the ileocæcal valve; the mucus of duodenum and ileum free from monads. Cæcum filled with greenish soft pulp containing many large ovoid ciliated monads (? *Trichomonas*), differing from the commoner form (*Cercomonas*). Larger infusorial species have been found in the cæcum.

No. 2.—A small animal, with parasites, being much injured, was killed. Organs of chest and abdomen of healthy aspect. The intestines contained a greenish pulpy food-mass, and were wholly free of entozoa or ova, nor were monads found in mucus of duodenum, jejunum, or ileum.

No. 3.—A small rat sickened and died, with hæmatozoa to the last. Body emaciated, heart and lungs of normal aspect, a small hydatid in the liver, no ova. The spleen elements normal; kidneys healthy-looking; stomach and intestines thin-walled, thin fæces present, a single worm (*Echinorhynchus*) in the small gut. No monads in the duodenal mucus.

In the next three animals the hæmatozoon had disappeared shortly before decease.

No. 4.—Pregnant female, not injured, non-febrile; became weak and died six days after capture, with sores; no visible cause of death. Parasites in liver and intestines as found in non-infected rats. The blood of two fœtuses free from hæmatozoa.

No. 5.—Died seven days after disappearance of the organisms. Aspect of blood not peculiar; coagulation and *rigor mortis* quick; viscera normal; ova in the liver; spleen unchanged; the feet œdematous; no bacilli in the serum there.

No. 6.—Died seven days after the gradual cessation of blood-infection. Emaciated; tail necrosed; at autopsy only wasting of the viscera.

Amongst rats always free from blood-contamination, so far as known, there was one autopsy with intestinal entozoa and ova in the liver as in *No. 4* above; and another with the liver crammed with ova and no entozoa, the blood charged with leucocytes and plasm-clumps; in two other examples ova in the liver and numerous monads in the intestinal mucus.

Surgeon-Major Lewis's account of the rat hæmatozoon being easily accessible, it is not needful for me to offer a new description of it. Dr. Crookshank has added two other characters—namely, a spine-like process at the hinder thicker extremity, and a lateral longitudinal membrane; remarking also that the flagellum pertains to the front or advancing end of the organism, thus, as in the infusoria, generally acting as a tractellum, and not as a propelling means or pulsellum. These features I have been able to see and confirm.

The hæmatozoon should be examined not only in its fresh active state, but

as well after exposure to the fumes of osmic acid (which kills without distorting), and after desiccation and staining as done in bacterial research; for each method furnishes useful data.

When, as usual, tolerably numerous in the layer of fresh-drawn blood the parasites seem to be diffused, and are readily detectable through means of the peculiar twirling motion of the red discs in their proximity; when but few exist a patient or repeated scrutiny of the blood is needed; the aspects are the same when few or many are present. As the material of those organisms, like that of bacteria, resists the action of acids and alkalies sufficiently concentrated to destroy obscuring red discs, a measurement of their total number is best made after drying the specimens of blood, and before staining exposing them to the action of acetic acid or liquor potassæ, all the filaments present, by this method, becoming visible and readily counted. Often the number present in the field seems equal to or greater than that of the leucocytes, and occasionally comparable to a percentage of the red discs themselves; such a swarming may, however, be illusive; yet if the parasites were only $\frac{1}{100}$ the number of red discs, their total in the circulation would amount to some millions. As to the movements exhibited, whilst it is possible such may be exaggerated outside the body under conditions abnormal and likely to prove irritative, still it may be assumed that during their stay within the blood-vessels these organisms maintain a degree of activity curious to contemplate. As seen in the freshest blood, their movements are so rapid as to be followed with difficulty by the eye, certain optical impediments concurring thereto; yet evidently the chief one is that of progression more or less direct, and accompanied by a lateral lashing or sometimes an apparent rotation. Progression may doubtless be either backward or forward, and misled by the idea of the thicker end being the head of the organism, I (like Lewis) gained the impression that it commonly advanced; yet it is certain that when more tranquilly performed progression is really with the flagellate extremity in front, as is usual in the other infusorial monads: this datum is important.

In the fresh state the substance of these organisms appeared under the higher powers to be homogeneous and translucent; yet, as described below, there presently appeared one or more bright spots in the thicker part. The very delicate lateral membrane became visible only in my osmic acid and stained specimens, and these served to confirm Dr. Crookshank's later observations to a considerable extent. Aniline staining, which has proved so serviceable in bacterial researches, did not seem to me equally trustworthy here, on account of the inconstant degree and site of colouring which it imparted; at least by this means I did not become assured of the presence of internal organs or of definite series of reproductive particles. Mr. Steel's specimens from Rangoon, however, when stained with methyl-violet, showed distinct appearances of immature organisms or rudiments, such as I find Dr. Crookshank has also detected and figured in the rats' blood: they merit further attention.

The next topic I would notice is the changes exhibited by these hæmatozoa in blood hermetically sealed, at rest and at a temperature of 70°—80° F. in the shade. Numerous experiments were made in February and in September, 1885, and at the time I was not aware that Lewis had made similar observations as recorded in his second Memoir; subsequently Dr. Crookshank has also alluded to this subject. My own results may be illustrated by the following extracts from note-books preserved:—

February.—A minute clot of infected rat's blood was covered with a drop of .75 per cent. solution of common salt, and examined at intervals with $\frac{1}{16}$ inch water immersion lens. After 3 hours, in the lateral open spaces movement less active; the thick end of the filaments seems to drag and bulge at intervals, showing a contractility of its substance which is still uniformly clear;

blood-cells unchanged, the red forming rouleaux; some micrococci have appeared oscillating apart. As the monads become quiescent they seem more slender and flattened, the ribbon-like margin wavy or angular; and that this change is not due to simple desiccation is evident from the red discs preserving their form and floating freely; next, a stiff, crumpled aspect ensues, the body of the organism assuming a skate-like form, the flagellum being still round, flexible, and mobile. At $4\frac{1}{2}$ hours a few bright dots appear in the motionless body, the flagellum still occasionally lashing spasmodically, as it were, and now it would be hard to recognise the monad. At 5 hours the bright dots are distinct, but not more numerous, the flagellum bent, clear, and quiet; red discs unaltered. Another specimen shows that the bright specks might be due mainly to knots or foldings, but some resemble "vacuoles." Not every one of the organisms here presents identical changes at the same hour, nor are all the red discs precisely alike; therefore some difference of individual properties may be inferred. The above description applies to the parts towards the edge of the thin glass cover, whilst nearer the centre of the preparation, where the blood-clot rests, the changes are very much less marked and the organisms are still active; in the central part appearances remain precisely as at beginning of the experiment. Shortly afterwards the changed monads at the sides were but faintly visible; and on the following day (27 hours) no other changes indicative of development were to be seen in the specimens, which had then become clouded. In an experiment with blood diluted with aqueous humour of the rat the monads had in the course of 4 hours become shrunken, bent, stiff, granular, and motionless; whilst in similar blood diluted with the salt-solution they remained very active at a like interval.

(To be continued.)

Reviews.

ILLUSTRATED HORSE BREAKING. By CAPT. M. HORACE HAYES.
(London: W. Thacker and Co. 1889.)

Captain Hayes is so favourably known as a writer of popular books on horses, that any addition he may make to the list already published is certain to command attention and deserve perusal. His present venture is as good in its way as any of his previous efforts, and will prove as interesting as it is certain to be useful. From time immemorial there have been horse-breakers, but those of recent times appear to rival their predecessors in fertility of resource, ingenuity in device, and reasonableness in application of their skill. Rarey was the first, perhaps, of the modern horse-breakers or tamers, and Hayes is the latest of the exponents of the new system. Between the two, others have appeared, and each seems to have given his quota of improvement; so that we suppose we may regard Hayes' remarks on the subject as the result of the cumulative observation and experience of all. The work is eminently practical and readable, and has much in it to interest and instruct veterinary surgeons, especially in handling and applying restraint to horses under different conditions, the necessary instruments being described and figured. The illustrations form a marked feature of the work, these

being fifty-two in number, and are well drawn by Mr. J. H. Oswald Brown.

TRATTATO DI OSTETRICA VETERINARIA. Per il DOTT. FEDERICO BOSCHETTI e DOTT. ROBERTO BASSI. (Unione Tipografico-Editrice Torinese. 1889.)

Some time ago, the medical and veterinary professions in Turin formed a company or union for the purpose of publishing works useful to both branches of medicine ; and so far as the veterinary profession is concerned, in the brief time that has elapsed its members and students appear to have no cause for complaint. Chauveau's classical anatomy of the domesticated animals has been translated from French into Italian by Dr. Boschetti, assistant professor of General Pathology and Pathological Anatomy in the Royal Veterinary School of Turin, and one of the most promising of the younger teachers of the Continental schools. The same talented writer has now undertaken the translation from English into Italian of Fleming's "Veterinary Obstetrics," and the first instalment of the work, which is to be published in about twenty-five parts, being now before us, we have nothing but praise for the manner in which it is produced. In addition to the excellence and the fidelity of the translation, the work will have the great advantage of the supervision and annotation of Dr. Bassi, Professor of Pathology, Clinical Surgery, and Obstetrics, in the same school, and whose name is so well known to those who are familiar with foreign veterinary literature.

The Italian veterinary surgeons already possessed two good works on this subject, by Cattaneo ("Manuale di Ostetrica Veterinaria") and Dr. Lanzillotti-Buonsanti, of the Milan Veterinary School ; this selection of an English treatise on veterinary obstetrics, instead of one in any other language, may be accepted as a compliment to the profession in this country.

THE TROPICAL DISEASES OF THE HORSE. Second Edition. By R. W. BURKE, M.R.C.V.S., A.V.D. (Imperial Press, Jubbulpore. 1888.)

We are glad to see that Mr. Burke's excellent little book has reached a second edition, as this has given him an opportunity of improving it considerably and bringing it up to date, and so making it more useful to veterinary surgeons in the tropics.

We quite concur with the author when he asserts that "India still offers the best, the widest, and the most fruitful field for pathological investigation ; and in no other service than in that of the veterinary department has a young officer so fair a chance of advancing our knowledge of disease. As a necessary part of his education, and as one of the means of making himself competent to this full discharge of his duties, every young practitioner or army veterinarian, before going to the East, ought to make himself thoroughly acquainted with at least the main facts of tropical diseases."

The book is valuable and interesting to others besides veterinary surgeons in the tropics, and gives evidence of the wide reading and careful observation of Mr. Burke.

Proceedings of Veterinary Medical Societies, &c.**ROYAL COLLEGE OF VETERINARY SURGEONS.**

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 31ST, 1889.

Professor PRITCHARD, President, in the chair.

Present.—Professors Axe, Brown, Duguid, McCall, Walley, and Williams; Messrs. Barford, Briggs, Carter, Cartledge, Dray, Greaves, Mulvey, Simpson (Sir H.), Simpson (James), Storrar, Taylor (P.), Wilson, Woods, and Wragg; Mr. Thatcher (Solicitor), and the Secretary.

The SECRETARY read the notice convening the meeting.

On the motion of Mr. TAYLOR, seconded by Mr. DRAY, the minutes of the last meeting were taken as read.

The SECRETARY announced that the letters expressing regret at their inability to be present at the meeting had been received from General Sir F. Fitzwygram, Mr. Cox, Mr. Perrins, Mr. Whittle, and Dr. Fleming.

Presentations to the Library.

The "Calendar of the Pharmaceutical Society" for 1889.

"The Excellent History of the Percheron Horse," by W. T. Walters, Esq., presented by Mr. Robert W. Ward, of the United States.

A photograph of a Troop Horse suffering from Anthrax, taken two hours before death, presented by Mr. T. Marriott, Punjaub, India.

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, a vote of thanks was passed to the donors.

A letter was read from Mr. Stephenson, of Newcastle, tendering his resignation as Vice-President.

The PRESIDENT said he had written a private letter to Mr. Stephenson, asking him to reconsider his resignation. Since then Mr. Stephenson had attended one if not two committee meetings, and he (the President) therefore came to the conclusion that he had reconsidered his decision. Yesterday, to make quite sure, he instructed the Secretary to send a telegram, and another was received in reply, saying, "Do not withdraw resignation. Stephenson."

Mr. MULVEY proposed, and Mr. TAYLOR seconded, that the resignation be accepted.

Sir HENRY SIMPSON was of opinion that any member might at any time resign by sending in his resignation in writing. Even if Mr. Stephenson had reconsidered his decision he could not have been readmitted, because the Charter said that sending in a resignation was sufficient.

This resolution was agreed to.

A letter was read from Mr. Steel asking that the Bombay Veterinary College might be recognised by the Royal College of Veterinary Surgeons.

Professor WALLEY said that some time ago a committee was appointed to inquire into not only this particular subject, but also into the Canadian and American colleges. What had become of that committee?

The PRESIDENT thought it had been allowed to lapse. There was never any meeting of the committee, which consisted of the principals of the schools.

Professor WALLEY thought the subject was not referred to the principals alone. It would have been very invidious for the principals to sit in judgment upon other colleges.

Mr. TAYLOR moved that a committee be formed consisting of Dr. Fleming, Sir Henry Simpson, Professor McCall, Professor Williams, Professor Walley, and Professor Brown, to take into consideration whether the Bombay School should be recognised.

Mr. GREAVES seconded the motion, which was carried.

The SECRETARY announced that an application had been received from

Mr. L. D. Williams, enclosing his diploma and the Principal's verification. He supposed that the committee would deal with that in the same way.

This suggestion was agreed to.

A letter was read from Mr. J. Roalfe Cox, dated 29th January, 1889, explaining his absence from the last quarterly meeting of the Council in October last.

A letter was read from Mr. W. F. Garry, dispensing chemist, asking to be exempted from the first professional studies because he held a certificate of the Pharmaceutical Society.

Mr. TAYLOR said he could not be exempted. The Bye-laws would not permit it.

The SECRETARY was instructed to send the usual reply.

A letter was read from Mr. D. F. Dubäsh, of the Bombay Veterinary College, asking if a graduate of that college could be entered for the Final Examination without going through the curriculum of the Royal College of Veterinary Surgeons.

The letter was referred to the committee which had been appointed.

A letter was read from Mr. Robert G. Brozell, asking whether he could forego the Final Examination, he having passed the First and Second Examinations.

Professor WILLIAMS said that Mr. Robert G. Brozell, who was a former student of his, failed two or three times at the Final, and he now wanted a diploma without further examination. It was quite beyond the scope of the Council.

Mr. TAYLOR said the request could not be granted.

The SECRETARY said he had already written to that effect.

A letter was read from Mr. Jno. Adam McBride, praying the Council to grant him a certificate, he having lost his diploma on leaving Japan for England.

Professor WILLIAMS said that Mr. McBride had been back in this country for several years, and was now practising at Stroud.

Mr. BARFORD moved, and Mr. STORRAR seconded, that a letter should be sent to Mr. McBride stating that the proof of the diploma having been lost was not quite sufficient, and that under those circumstances a certificate could not be granted.

The resolution was agreed to.

The SECRETARY read the report of the Finance Committee, which showed that the present balance at the bankers amounted to £573 4s. 11d.

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, the balance-sheet was received.

Mr. WRAGG moved that the report be adopted.

Mr. DRAY seconded, and suggested that the Council should grant permission for cheques to be drawn to meet liabilities.

Mr. WRAGG asked if the Council could see their way to alter or rescind their resolution to charge for the use of rooms in the College by any member of the profession, so that the National Veterinary Association might be able to hold its next summer meeting in the College, and that any other veterinary association might have the same privilege on payment of expenses for firing, gas, etc.

Mr. DRAY protested against rescinding the resolution.

Mr. TAYLOR proposed, and Mr. DRAY seconded, that the resolution be not rescinded.

Mr. WRAGG said he could see that the feeling of the Council was opposed to his proposal, and he would therefore withdraw it.

Professor BROWN called attention to Regulation 7, in regard to Final Examinations, which, so far as the Camden Town School was concerned, worked extremely badly. It amounted to this, that a man who had a practice

of his own and failed in his Practical Examination might go back until a month before the examination, the date of which he had somehow or other to find out. It really was commonly not known a month before, and even if it were known the colleges did not know the men who intended to come up for the next examination. Under those circumstances, a man must get some one to look after his practice while he attended the College and received instruction on subjects in reference to which he had already passed his examination. In his opinion, the object of the Council would be perfectly met by saying that each student who had successfully passed the oral sections should forthwith present himself at the Practical Examination. Should he fail, he might be permitted to attend at the succeeding Practical Examinations, either for a specified or an unlimited number of times. On no principle that he could realise was there the slightest occasion for his returning to the College. Under those circumstances, unless there was some strong objection on the part of his colleagues, he would propose to give notice of the alteration which he had just suggested.

Professor WILLIAMS said he quite agreed with Professor Brown. In his opinion, in the original alteration of the Bye-law the return to the College for a month was never thought of. It only came in at the last moment, and he would gladly second Professor Brown's proposal.

Professor MCCALL said it might seem that he had introduced the conditions when he moved that the Oral and Practical Examinations should be disjoined, but in reality he was forced to do so. The question was put, what were the students to do after they had passed their Oral, and it was specially stipulated that they must remain at the College, or be in attendance with a member of the Royal College of Veterinary Surgeons, and that that member was to certify to the Principal that they had been so in attendance. It never was contemplated for one moment that a student who had passed his Oral would be allowed to engage in practice for himself. It was a very good thing that he should return to the College for a month. At the same time he should be delighted if the Council felt inclined to expunge the conditions, though in doing so he thought they would open the door too wide.

Mr. JAMES SIMPSON objected to any alteration of the Bye-law.

Professor BROWN said he had not intended to raise any discussion, but if allowed, he would put up a notice in the usual form, and the matter could be discussed at the next meeting.

Professor WALLEY said the understanding was that all students then in a college would be under the old rule, so far as twenty years of age was concerned.

Professor BROWN said it was unquestionably so understood, and it was distinctly stated that the Bye-law would not be pressed.

The PRESIDENT said that a man who was in a college at the time of the passing of the Bye-law must be now of proper age, or else he must have been very young when he entered the college.

Professor WALLEY said that Mr. Rutherford had refused to take a man who was six days under twenty.

Professor BROWN said that after the Byelaw was passed, and the understanding was arrived at in the Council that it should not be enforced on those men who were already entered, some half-a-dozen came to him and asked if they would be allowed to go up, and he signed their certificates, acting strictly in accordance with the understood agreement.

Mr. TAYLOR said the Scotch schools should be treated in the same way.

The SECRETARY read the "Report of the Committee on Hereditary Unsoundness."

Professor BROWN thought that the subject which had been brought before them by the letters of the Royal Agricultural Society and the Royal Com-

mission was perhaps one of the most important with which the Council had ever had to deal, and the whole circumstances reminded him of the classical fable of the Sphinx, which the poet said appeared on the shores of the Ægean Sea and stopped all the passers by, asking each an abstruse riddle. If the riddle were not answered satisfactorily the unfortunate passenger was immediately devoured. In the present case the Sphinx was represented by the Royal Agricultural Society and the Horse Breeding Commission, while the Council were the unfortunate passers by. If they did not give a satisfactory answer to the riddle which had been proposed to them, they would meet an infinitely worse fate than befell the passing Greek. They would not run the least risk of being devoured, but they would be made to look ridiculous. The Association and the Commission expected to be told distinctly what particular diseases the Council, as representing the profession, intended for the future to accept as a legitimate cause for disqualifying animals for breeding purposes. It was undoubtedly very desirable that the matter should be settled at that meeting by the Council, and that a report should be in the hands of the Association and the Commission by the beginning of next week. He suggested that a letter should be written, stating that after having conferred with the members of the profession, the Council was prepared to enumerate certain diseases as legitimate causes for the disqualification of animals for breeding purposes. Then would follow the diseases which the Council decided upon after discussion.

Sir HENRY SIMPSON said the Council must be careful not to stifle the voice of the profession. At least half those gentlemen who had professed to give any opinion at all considered that Roaring, Side-bone and Spavin were hereditary diseases. That was a *prima facie* reason for including those diseases. At least one third decided that Shivering, Splint, Grease, and Cataract were hereditary diseases.

Professor BROWN suggested that the word "hereditary" should not be used at all. It was a most dangerous expression.

Sir HENRY SIMPSON agreed with Professor Brown. Would it not be worth while, considering the numbers of the profession who had expressed an opinion on those diseases, to limit the discussion to the first ten in the list?

Mr. JAMES SIMPSON said he should be guided by the number of votes given.

The PRESIDENT thought the suggestion thrown out by Sir Henry Simpson, that the Council should take the majority of votes in selecting the diseases which should be looked upon as disqualifications, was a very good one.

Sir HENRY SIMPSON proposed that all those diseases which half the gentlemen appealed to considered disqualifications should be admitted, namely, Roaring, Side-bone, Ring-bone, Navicular Disease, Curb, and Spavin.

Mr. CARTLEDGE.—Would you say both Bone and Bog Spavin?

Sir HENRY SIMPSON.—Yes. He would leave out "Spavin" from his resolution, in order that it might be discussed separately.

Professor WALLEY seconded the motion, that the first five diseases were disqualifications.

The resolution was passed.

Sir HENRY SIMPSON said that there were 206 votes in favour of Bone Spavin being a disqualification, and 126 in favour of Bog Spavin. Those two added together amounted to a sufficient number out of the 385 returns to justify the Council in disqualifying animals having those diseases. He would propose that the word "Spavin" be included in the list.

Mr. TAYLOR seconded the motion.

Professor AXE moved as an amendment that "Spavin," in its general acceptance, be included in the list, without any reference to any special acceptance of the term.

Professor WALLEY seconded the motion.

Professor WILLIAMS said that would include Bone, Bog, and Occult Spavin.

Mr. CARTLEDGE did not think that the Council could distinctly say that a disease of the articular surfaces of the bone could be called "Spavin."

Professor AXE thought that the term "Occult Spavin" should be eliminated from usage, and therefore he would alter his proposal so as to include only Bog and Bone Spavin.

Mr. BRIGGS suggested that the words should read, "Bone Spavin and Bog Spavin."

Professor AXE's amendment with this alteration was put to the meeting and carried.

Sir HENRY SIMPSON said that the next four on the list were "Splint, Grease, Shivering, and Cataract." There seemed to be no difficulty about "Grease," "Shivering," and "Cataract;" but with regard to "Splint," while everybody knew that it was hereditary, it was not of such serious consequence as to cause the rejection of a horse. He would therefore propose that "Grease," "Shivering," and "Cataract," be included in the list.

Professor BROWN seconded the resolution.

The resolution was carried.

Professor AXE said there were three or four affections, with regard to which qualifying representations should in his opinion be made. He would hardly like to omit "Splint" from the list, because he thought that under certain circumstances it was a legitimate reason for disqualification. If a horse had multiple splints in proximity to the knee-joints he certainly should give a negative answer to the desirability of using it for the stud. There were also certain conditions of feet which should not be passed over. Next, practical breeders knew that Bursal Enlargements were hereditary, and that would include Thoroughpin.

Professor WILLIAMS proposed that "Thoroughpin" be added to the list.

Professor McCALL did not think it necessary to add "Thoroughpin" to the list.

Professor AXE moved that Bursal Enlargements may, under certain circumstances, be considered to constitute reasonable grounds for rejection.

Sir HENRY SIMPSON seconded the motion.

Professor WILLIAMS's proposal to include "Thoroughpin" in the list was negatived.

Professor AXE's proposal, in the following words, "That Splint, Contracted Feet, Weak Feet, Bursal Enlargements, such as Thoroughpin and Windgall, under certain circumstances, represent reasonable grounds for rejection," was carried.

On the motion of Professor AXE, seconded by Professor BROWN, "Stringhalt" was added to the second list.

Mr. BARFORD proposed, and Mr. STORRAR seconded, that "Lymphangitis" be added to the second list.

The motion was put and lost.

On the motion of Mr. WILSON, seconded by Professor McCALL, the report of the Committee was received and adopted.

Professor WILLIAMS asked if "Roaring" included "Whistling."

Sir HENRY SIMPSON said that he intended it to do so.

The SECRETARY read the report of the Registration Committee.

On the motion of Mr. WRAGG, seconded by Mr. CARTER, the report was received, and on the proposal of Professor McCALL, seconded by Mr. WRAGG, it was adopted.

The report of the Court of Examiners was taken as read.

Sir HENRY SIMPSON asked if the President would call a meeting of the committee appointed last October to inquire into the salary, duties, and

allowances of the Secretary of the College, in order that they might be able to report to the next quarterly meeting.

The PRESIDENT said he would take care that that was done.

On the proposal of Mr. WRAGG, seconded by Professor WILLIAMS, Messrs. Broad and Woodger were appointed auditors, and on the suggestion of the PRESIDENT, it was agreed that Mr. Roots should be asked to act if required.

On the motion of Mr. JAMES SIMPSON, seconded by Professor WALLEY, the committee to draw up the Annual Report was reappointed, consisting of Dr. Fleming, Professor Brown, Sir Henry Simpson, and Mr. Dray.

Professor BROWN brought forward the following draft of a letter for the Secretary to send to the secretaries of the Royal Agricultural Association and the Royal Commission:—"Sir, I am directed by the President of the Royal College of Veterinary Surgeons to inform you that in accordance with the request contained in your letter of . . . the Council of the College communicated with the members of the veterinary profession residing in Great Britain, with the view of obtaining an expression of opinion as to the diseases which render an animal (stallion or mare) unfit for stud purposes. Having considered the evidence which has been laid before them, the Council of the College are of opinion that the following diseases shall be deemed to be a legitimate reason for disqualification:—Roaring, Side-bone, Ring-bone, Navicular Disease, Curb, Bone Spavin, Bog Spavin, Grease, Shivering, Cataract. The Council also consider that under certain circumstances the undermentioned diseases shall be deemed to justify the rejection of an animal for breeding purposes:—Splint, Stringhalt, Contracted Feet, Weak Feet, Bursal Enlargements (such as Thoroughpin and Wind Gall). I am, sir, your obedient servant."

On the suggestion of Professor WILLIAMS, "Whistling" was added to "Roaring."

Professor WALLEY proposed, Sir HENRY SIMPSON seconded, and it was agreed to, that a letter in the terms suggested by Professor Brown should be sent to the Secretaries of the Royal Agricultural Association and the Royal Commission on Horse Breeding.

The Obituary Notice was taken as read.

The May Examinations were fixed for May 14th in London, and May 21st in Scotland.

SPECIAL MEETING.

Mr. WRAGG, in moving his notices of motion, said it appeared to him that the laws for conducting the election of members of the Council were very weak. Every municipal and parliamentary election was governed by stringent laws, and it behoved the Council, as men of business, to see that their elections were conducted in a business like manner, which they were not at present. Without further preface he would move the alterations of which he had given notice.

Professor WILLIAMS seconded the motion.

Professor WALLEY said that considerable time was spent not long ago in revising the Bye-laws, and he proposed as an amendment that the whole matter be referred to the Bye-laws Committee for them to report on it.

Mr. WOODS seconded the amendment.

The amendment having been put, was carried.

On the motion of Mr. WILSON, seconded by Mr. JAMES SIMPSON, Mr. Wragg's name was added to the Bye-laws Committee.

A vote of thanks to the President, proposed by Mr. WOODS, and seconded by Professor MCCALL, was agreed to.

Sir HENRY SIMPSON drew attention to a clay bust of Professor Robertson which had been placed in the Council Room. The Professor's students, immediately on his death, decided that they would like to have his bust placed

in the Royal Veterinary College, and Mr. Birch had prepared a clay model. The amount required was £250 for two bronze busts; £80 had been collected, and he wished to consult the Council ex-officially as to whether they would like a companion bust placed in their Council Room.

The proceedings then terminated.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE annual meeting and dinner of the above Association was held at the Victoria Hotel, Victoria Street, Manchester, on February 8th.

Present: E. Faulkner (President), Messrs. Thos. Greaves, Peter and W. A. Taylor, S. Locke, J. B. Wolstenholme, T. Hopkin, J. Moore, P. Pike, Lloyd Jones (all of Manchester); H. Ferguson (Warrington), Jas. Hart (Oldham), W. Woods, Jun. (Wigan), Thos. Briggs (Bury), R. C. Edwards (Chester), W. Noar (Bury), J. S. Hurndale (London), H. Edgar (Dartford), E. S. Gubbin (Glossop). Included in a list of distinguished visitors were Alderman Schofield and Councillor Gibson (Manchester City Council), Professors Williams, Lewis, and W. O. Williams; Messrs. F. W. Wragg, R. C. Trigger, W. Lodge, W. F. Greenhalgh, Chas. Phillips, A.V.D., W. Hall, Dr. Dreschfeld (Owen's College), Drs. Fairclough and Heslop, Major Heap, Rev. H. Leathley, J. E. Boden, C. Martyne, G. Lorrinan, J. E. Beckett, F. Green, J. D. Allman, J. Evans.

Letters of apology, regretting their inability to attend, were received from upwards of forty gentlemen, amongst whom were the Mayor of Manchester (Alderman Batty), prevented by indisposition, Prof. Young (Owen's College), Profs. McCall, Walley, Axe, MacFadyean, and Brown, Prof. Pritchard (President of R.C.V.S.), G. Fleming (P.V.S.), L. L. Daud, also J. W. Maclure, M.P. (Manchester), and W. Hunting (London).

Mr. Peter Pike, M.R.C.V.S. (Manchester), Mr. William Noar, M.R.C.V.S. (Bury), and Mr. Joseph Urmson, M.R.C.V.S. (Bolton), were elected members of the Association.

The following were nominated for membership of the Association: Messrs. Ernest S. Gubbin, M.R.C.V.S. (Glossop), and William Hall, M.R.C.V.S. (Royton).

It was decided that the day and date of the next meeting be left open, in order to facilitate arrangements being made for a discussion on "Parturient Apoplexy," to be introduced by Messrs. J. B. Wolstenholme (Manchester) and Dr. Cullingworth (London).

Proposed by the PRESIDENT, seconded by Mr. J. B. WOLSTENHOLME, that Mr. Peter Taylor be the nominee of this Association at the forthcoming election of Council, which, after being supported by Mr. THOMAS GREAVES, was carried by acclamation.

Mr. TAYLOR afterwards replied.

Proposed by Mr. THOS. GREAVES, seconded Mr. H. FERGUSON, that the usual Election Committee be appointed, and that this Association combine as heretofore with the Yorkshire and Midland Associations.—Carried unanimously.

The PRESIDENT then delivered his inaugural address:—

GENTLEMEN,—This is the twenty-sixth annual meeting of the Lancashire Veterinary Medical Association, and having been unanimously chosen to preside over your deliberations during the ensuing twelve months, I gratefully acknowledge and appreciate this evidence of your good-will, esteem, and confidence, and trust, by conducting affairs in a courteous, fair, and impartial manner, assisted by the able gentlemen you have appointed to co-operate with me in the work, that we shall, at the expiration of our year of office, so have furthered the interests of this Association as to merit your approbation.

Representing, as does this Society, the profession in the County Palatine of Lancaster, and numbering some seventy members, this combination should

prove a power, the prime mover and centre of an ever-widening and increasing usefulness, scientifically, professionally, socially, and pecuniarily; and of those good men and true who have striven and wrought to keep this county of the Red Rose in the van of professional progress, I say all honour, and may they have their due reward.

Societies such as ours are of incalculable benefit from various points of view. Our senior members must, I feel assured, have derived many advantages therefrom, or why have they been such regular attenders and active workers? Surely the benefit they derived has been that which they sought, an extension of knowledge and clearer comprehension of things, better fitting them to practise their professional calling. And if our seniors have improved by being attached to an Association, what can be said of the golden opportunities placed directly in the path of junior members, the chances of self-improvement to be gained from the accumulated and varied experience of those much longer in the profession? Why, they are incalculable and priceless to all possessed of aspirations and an earnest desire for self-improvement.

I am much impressed by one particular advantage gained in joining veterinary medical associations directly after leaving college, in the chance offered of cultivating debating power. This can only be acquired by practice, and necessitates study, sharp and precise habits of thought in forming a judgment, and a ready facility in expressing the conclusion arrived at in lucid, comprehensive, and convincing language. This is a most desirable acquisition, should be sought after in early life, and is serviceable at all times.

Our coming meetings for the reading and discussion of scientific subjects will, I trust, prove rich in matters of special pathological and therapeutic interest, the result of close and careful observation, with minute and accurate notes thereon, and the preparation and exhibition of morbid specimens. Further investigation as to the etiology, morbid anatomy, pathology, therapeutics, and prevention of such diseases as Purpura Hæmorrhagica and Azoturia is still urgently needed, as in some instances so severe and suddenly fatal is the attack that our efforts to cope with it are entirely futile.

This Society might with decided advantage follow the course taken by others, in having all papers of considerable scientific interest printed and circulated amongst the members prior to the day of meeting. An opportunity would thus be afforded for reading up and studying the subject and forming a judgment thereon, with the probable result that the value of the discussion would be enhanced by being untrammelled with superfluities. Such discussions would be the outcome of matured consideration, and worthy of being permanently recorded in their entirety. This I am aware would necessitate the employment of a reporter on special occasions, in which I see no insurmountable obstacle, provided the end justify the means.

In turning now from our Association in particular, and glancing at the veterinary profession in general, how does it stand to-day in comparison with the past? Progressing, undoubtedly. In scientific knowledge and attainments, much advanced and advancing; professional and social standing, improved and improving. As evidence of advance in science, we have now within our ranks gentlemen of high scientific attainments, thoroughly competent to take in hand and carry through original investigations and scientific research, we have others who have established an enviable reputation by means of their surgical operations, skill as chloroformists, etc., and as scientific general practitioners we are so much advanced as to be inferior to none.

In the domain of literature much has been accomplished; reference to verify such need only be made to the works of Williams, Fleming, Robertson, Walley, MacFadyean, Smith, Hunting, Steele, and many others, and in addition the monthly, quarterly, and weekly publications of the profession, amongst which the *Journal of Comparative Pathology and Therapeutics* stands conspicuous,

eminently filling, as it does, a decided professional want; and such may also be said of that piquant, useful, and instructive organ the *Veterinary Record*.

Our evidence of improved professional and social standing is in the increasing recognition of the importance of our profession by the sister and other professions and learned societies; the calls that are made for professional services and information by agricultural societies and colleges, special commissions, horse-breeding committees; etc., the rank and position in life occupied by many of our members, who are known to be gentlemen of ability, and the honours that have been bestowed upon them.

Notwithstanding the advance already made, I am hopeful that the positions won will not only be maintained, but added to, and that our profession may be found ever progressing, striving to deserve success, command confidence and public esteem, and be equal at all times to whatever demand is made upon it.

As extra incentives, and being specially needful for the proper encouragement of advanced study in special subjects in the matter of higher education, our profession stands much in want of endowments, bursaries, and scholarships, through which the necessary extended education could be obtained to fit those having the inclination, ability, and opportunity to become educated as specialists in any of the various branches of our science, such as chemistry, medicine, hygiene, pathology, micro-biology, etc.

Now that the subjects taught and examined upon are so divided, and such ample time is allowed students to become thoroughly educated, the day will come, and that I hope ere long, when there will be an increase in the time students are under examination, and with that a corresponding increase of practical examination in all subjects, as a test of ability as practical anatomists, botanists, chemists, and microscopists. This, with the addition of a written to the *vivâ voce* examination, must tend to professional advancement and stability.

To the medical profession, for material assistance in the past, we owe a debt of gratitude, and now that we are able to walk and act our part as specialists concerned with the well-being of the lower animals, we trust to be co-workers with the sister profession in the extensive field of comparative pathology; for in certain directions it is a well-recognised fact that the two professions are in touch, necessitating a combined working, for complete, accurate, and thorough investigation of those diseases communicable from animals to man. So much is this understood and appreciated on the Continent that in Paris, last year, the congress gathered together for the consideration of that important malady Tuberculosis was one composed of representatives of the two professions, to the undoubted advantage of the question under consideration. May such be the course adopted here in time to come, when like diseases are under consideration in this country, from which benefit will accrue to the public and both professions.

So important is the question of the veterinary profession being the proper sanitary authority as to the diseases of animals communicable to man, the fitness of flesh and milk for food, and the presence or otherwise of injurious parasites, and also that the inspection of dairies, shippens, and slaughter-houses should be entrusted to them, that recently a meeting of veterinary surgeons practising in this city memorialised the Mayor as to the desirability of having a veterinary department in connection with that of the medical officer of health, and the matter is at present under the consideration of the city authorities.

I am now, gentlemen, about to bring my few remarks to a close, but before so doing should like to touch briefly upon our pecuniary interests, which under present circumstances and condition of things are not unworthy of consideration, in the hope that by a mutual good understanding, and becoming

more combined and cemented together for a common good, a remedy for an unpleasant state of things may be found.

We are all aware that to-day, in comparison with the past, members of our profession must either render more service for the same return or the same amount of service for a less return. This we all know is a condition of the times, the result of increased supply and competition. With this it is useless to complain, but what to my mind calls for discontinuance is the soliciting and canvassing for business not in the market, by established members of the profession, and the offered reduction in charges in order to secure it. This tends only in one direction—degradation of the profession, and the supply of professional services at a price in some instances barely remunerative, in others unremunerative.

I am one of those who believe there is work for all possessed of industry, ability, skill, and business capacity, at remunerative prices, without any necessity for one acting unprofessionally towards another, or endeavouring to enrich himself by another's loss. Can we not, then, combine in such a manner as to have a uniform scale of fees, fairly serve the public, and also protect each other's interests, remembering well and striving to do one to the other as we would each be done by?

Mr. HOPKIN thanked the President for his able discourse, and proposed a vote of thanks, which was seconded by Mr. JAS. HART, and was accorded unanimously.

The dinner afterwards took place.

Dinner being over, the usual patriotic toasts were given by the President, viz., "The Queen," followed by that of "The Prince and Princess of Wales, and the rest of the Royal Family," musical honours being accorded, Mr. S. Locke rendering the solos in his usual excellent manner.

"The Army, Navy, and Auxiliary Forces" found an able advocate in its proposer, Major HEAP, and was happily responded to by Mr. HART.

Mr. W. A. TAYLOR, in proposing "The Mayor and Corporation of Manchester," after some preliminary remarks, dwelt upon the matter at present under the consideration of the City Council, viz., the necessity for the co-operation of a veterinary sanitary authority with that of the medical officer of health.

In the absence of the Mayor, the toast was responded to by Alderman SCHOFIELD and Councillor GIBSON.

"The Medical Profession" was proposed by Mr. PETER TAYLOR, and responded to by Drs. DRESCHFELD and HESLOP.

"The Veterinary Profession" was proposed by Dr. FAIRCLOUGH, and Professor WILLIAMS and Mr. THOMAS GREAVES responded.

Professor WILLIAMS then proposed the health of the President, and in terms of eulogy and praise dwelt upon his professional career from the time he had first made his acquaintance.

The PRESIDENT thanked Professor Williams and the other gentlemen present for the very hearty manner in which they had drunk the toast of his health. He appreciated the sentiments expressed by Prof. Williams, and concluded by stating that he would endeavour to the utmost of his ability to promote the success and welfare of the Association during the coming year.

Mr. J. B. WOLSTENHOLME proposed the toast of "The Visitors," Mr. R. C. TRIGGER responding.

Mr. J. S. HURNDALL, in very appropriate terms, proposed the health of the ladies, which was responded to by Prof. LEWIS.

The meeting was indebted for the musical portion of the evening to Councillor Gibson, Dr. Fairclough, Mr. Sam Locke, and Mr. J. S. Hurndall.

ARTHUR LEATHER, *Hon. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary general meeting of the above Society was held at the First Avenue Hotel, Holborn, on February 7th. Mr. Alfred Broad (the President) occupied the chair, and there were present twenty-two Fellows and two visitors.

Letters of apology for non-attendance were read from Professor Walley and Mr. William Lewis.

Mr. RAYMOND announced that he had handed over to the Charity Organization Society the money collected at the last meeting in aid of Mr. C. J. Thompson; that he had also seen Mrs. Thompson, and he was in a position to assure them that the case was most deserving of their charity.

Morbid specimens were then exhibited, as follows:—By Mr. ARTHUR ROGERSON, the pelvic bones of a mare, showing an old-standing and a recent fracture; by Mr. CATON, the tibia of a horse which, he pointed out, also gave evidence of old-standing and recent fracture. He considered one fracture was of a month or more standing, the other of less than twelve hours.

Opinion on this point was divided, some gentlemen considering it a case of “deferred fracture.”

Mr. OVERED, of Finchley, exhibited the stomach of a mare showing ulceration, which he thought was produced by the administration of arsenic or some other irritant poison.

The PRESIDENT showed the penis of a dog with an urethral calculus *in situ*. The dog, for the last few days of its life, was unable to urinate except in drops, which appeared to cause great pain. Although he (the President) recognized the presence of the calculus, he was unable to remove it by mechanical means on account of the very small size of the urethral canal.

Mr. ALFRED BROAD then addressed the meeting as follows:—

My remarks this evening are on some of the salient affections of the colon. I trust you will excuse their short and sketchy nature, as they have been hastily written in fulfilment of a promise to our Secretary that I would endeavour to fill, at short notice, any gap occurring in our succession of essayists. The subject has been exhaustively dealt with in an essay written by Mr. F. Smith for the National Veterinary Association, August, 1887, a paper which is worth careful perusal. In the VETERINARY JOURNAL for December, 1879, Professor Walley has also an instructive article bearing on this topic; but I do not remember that the subject has ever been discussed at our meetings. A great deal of the interest attaching to intestinal complaints is centred on the question of diagnosis, and I had some idea of suggesting that we should take the matter up, collecting data and information individually, and discussing it collectively; it is not a point to write upon off-hand, and I have not had the time to lay the matter before you as I wished.

The colon suffers in many ways. For instance, there is calculus formation, indigestion with tympany, torsion, impaction, inflammation, and others I might enumerate; but I purpose to chiefly confine my remarks to torsion and Enteritis. Professor Walley and Mr. Smith both advance the opinion that simple or uncomplicated Enteritis is of rare occurrence; that, when found, it is usually the result of other mischief, as displacement, twist, or strangulation. There can be no doubt that displacement, with torsion, of the colon is the producing agent of many cases of Enteritis (so described). I have examined the carcasses of horses when a twist was certainly expected to be found, and have been disappointed to find only intense inflammation of mucous membrane (whether I observed discolouration of the peritoneal covering I cannot now remember). I have been somewhat perplexed, as I could not but think it strange that the symptoms witnessed *post-mortem* did not yield to the

treatment employed. In these cases probably there had been displaced colon, with partial strangulation, and a hasty, careless removal of the bowels from the abdomen had prevented its discovery by restoring their proper position.

I think we shall find that torsion of the colon is not an uncommon occurrence; a *post-mortem* examination is not made in every fatal case; sometimes, also, it is left for the slaughtermen to send a verbal message as to the condition of the bowels, and the answer has not infrequently been, "Twisted broad gut." Since October last I made an examination in two fatal cases, and found displacement and twist of the colon in each; they were both cases in which my attention was not requested till many hours after the preliminary attack, owing to the apparent recovery; that is to say, the medicine given by the owners so far alleviated the symptoms as to lull all their feelings of anxiety. What is the cause of these colic displacements, torsions, and thorough reversals of positions? I may here mention that, in the two cases I alluded to, the double colon was so reversed that the pelvic flexure was placed forward towards the diaphragm, and in addition, in the second case, the pelvic flexure itself was completely twisted. Do the large bowels become displaced by the animals rolling? I cannot think so; it is true the colon is not closely attached to its surroundings, but we must remember that the whole contents of the abdomen are kept in close apposition by the abdominal walls, and with a pretty firm elastic pressure; so much so, that I think a change of posture, however sudden, would rarely alter their relative position. The displacement is brought about by exaggerated muscular spasm.

We certainly can account for torsion without the factor of rolling; most of us probably have had cases in which all the circumstances pointed to the probability that the twist occurred while the horse was in the shafts, driving the animal after pain was evinced having increased the spasmodic action of the bowels to a violent extent.

As far as twist of the colon is concerned, I have not remarked that it has been found in horses which have rolled and plunged to a great degree; most frequently these violent actions are seen in those cases in which we get periods of ease, and ultimate, sometimes rapid, recovery. Violent contortions, then, of the bowel, and according to many, "rolling," are immediate or direct causes of displacement; the indirect cause is indigestion from various well-known agencies.

The colon also suffers from blocking or impaction from different causes, as calculi, tumours, and coarse undigested food; it may also become plugged by inversion of the cæcum. Mr. Smith related a case of this kind in his essay, but his statement was doubted, one speaker expressing the opinion that such an occurrence was very improbable and hardly credible. I can thoroughly support Mr. Smith, having witnessed just such a case. Subject, a bay pony, three years old; cause of attack, a large draught of water directly after arriving home in a heated condition. I extract the following description of the parts from an old case book: "Exterior of colon and visible part of cæcum dark-coloured from mortification, three parts of the cæcum inverted into the colon, where it lay a dense thickened mass completely occluding the passage. On laying open the colon, the visible interior coat of the cæcum was dark-purple in colour, its coats an inch thick from extravasation of blood." The pony lived five days.

In common with other portions of the digestive tract, the colon suffers from tympany. For this most painful condition, puncture by trochar and cannula will be found a valuable remedy.

How much tympany is due to windsucking? Is ever air drawn into the stomach? I cannot believe it. This strictly does not come within the scope of remarks on the colon, but as during the discussion on Mr. Smith's essay such divergence of opinion was expressed as to whether horses could swallow

air, I venture a few words on the point. We should reflect on the mechanism of deglutition; a substance is conveyed by voluntary effort to the base of the tongue, but the voluntary action ceases, the substance (food or water) is grasped by the fauces and passed down the œsophagus, air normally is present around the glottis and fauces. How could any portion of air be seized by the involuntary action of the parts and passed into the œsophagus? If it were possible to so control the stomach or œsophagus as to produce a tendency to a vacuum, as can be done with a syringe, then, and then only, might air be induced to pass down according to natural laws; but the elasticity and the power are wanting. In the thorax the ability to do this exists and, as a consequence, air enters the mouth; but it must pursue its course to the lungs where the indraught is originated; there is no power to guide it down the œsophagus. I admit that to any one watching an habitual "windsucker," it appears natural to suppose that air is swallowed, and there is a gulping noise produced. This, however, may be gaseous eructation. One speaker said, "Surely if a horse can pass air up he can draw it down"; but this is a contention I cannot admit, and I do not see the force of the argument. I have tried to show why air cannot be swallowed; but that gas can pass outward from the stomach is perfectly natural; possibly the position assumed by the "windsucker" renders the act easier.

Enteritis.—I have certainly become impressed with the idea that the inner coats of the colon do frequently suffer from inflammation without prior injury (as that from twist, etc.); and I would usually ascribe the cause to cold and exposure, or wet and chill. We frequently can elicit the information, when called to the case, that the horse showed signs of a cold for one or two days before the onset of abdominal pain. Inflammation of the mucous coat is not uncommon in association with thoracic complaints, and on *post-mortem* examination after cases of Pneumonia, I have sometimes found it to a surprising degree. It is evidenced by the unnatural appearance of the fæces, the slimy mucus, sometimes by the condition of the buccal membrane. Acute pain is shown when the muscular coat is implicated with the mucous; a typical case of this kind is unconnected with other disorder; exposure to cold or wet produces bowel inflammation; indigestion follows, with subacute abdominal pain, and retention of fæces for several days. The pulse remains about 44 or 48; the symptoms yield to appropriate treatment, and appetite returns; a feed of corn injudiciously given will generally cause a return of pain. Though it is often four days before the action of the bowels is restored in these cases, I consider aloes quite inadmissible. I would give no stronger aperient than four ounces of sulphate of magnesia twice or three times. These are the cases frequently classed as impaction and stoppage of bowels.

It may, of course, be said that we have here cases of partial twist, followed by recovery; the sequence being indigestion, spasm, displacement, tympany, subsidence of pain and relief of tympany, restoration of the position of bowel, gradual recovery of muscular tone in the colon, with passage of its contents.

What diagnostic symptoms have we to guide us in forming a decision or opinion as to the part affected, or the nature of the affection? This is the most difficult part of my subject, and one on which your opinions will be found most useful.

I am afraid that if we note the symptoms shown in colon affections, we shall not find them specially diagnostic; in milder cases, as partial torsion or subacute Enteritis, there is dull pain, evidenced by the facial expression, by looking round at the flanks, disinclination to lie down, or lying down and getting up again quickly; hard pulse, not very rapid; temperature about 103°; no passage of fæces after the little voided at first. In complete torsion of colon, the

symptoms are more severe: alternation of hot and cold sweats; rapid pulse, becoming weaker; tympany; anti-peristalsis of bowel; striking at abdomen with hind feet; comparatively rapid sinking.

The symptoms shown in cases of obstruction from a calculus are somewhat similar, but of moderate severity at first, and may extend over many days—six, eight, or nine.

To those who have practised it sufficiently, a manual examination, through the rectum, of the position occupied by the various portions of bowel within reach, and of their condition, as well as that of the rectum itself, will be of valuable assistance. Looking round at the flanks is a common symptom, and not diagnostic; but when the nose is persistently kept round to one spot, it may be taken as a sign of great danger, as is almost any evidence of pain continued without intermission—for instance, the violent continuous pawing often witnessed during the later stages of fatal bowel disease. The pony I referred to as suffering from inverted cæcum was afraid to lie down, and for two consecutive days stood almost constantly in a particular position, its head elevated, so that the chin rested on a high part of the partition dividing the box from a stall.

TREATMENT.

The principal aim of treatment is to relieve the pain—so far as practicable, to remove the cause of pain; thus, carbolic acid is a useful agent to arrest decomposition of the food and formation of gas, and the trochar a good remedy for tympany when established. Opinions are greatly divided on the question of giving aloes; in most cases it will be beneficial, provided we have had charge of the case from its commencement, and give the aperient draught early. An argument against physic is that many cases recover after a dose or two of antispasmodic medicine, and can return to work earlier than if they had aloes; but I do not think it an argument of great weight. The aloes need not be given till there are indications that the first, or even the second dose, has failed to relieve; then I believe for every one case lengthened by aloes, at least one, perhaps more, would be shortened, while all the patients would be better for the dose and rest.

Still we are not, as a rule, called till some time after the commencement of the pain; and I have for several years gradually discontinued active purgatives, finding it safer on the whole. I have contented myself with small doses of sulphate of magnesia, and sometimes linseed oil. Stimulants are useful in the early stages, but later, when there is continuous pain and evidence of inflammation, I adhere to the practice of giving moderate doses of tincture opii

$3 \frac{i}{iv}$, also subcutaneous injection of morphia.

A highly valuable adjunct is a flannel rug dipped in hot water and wrung out and bound round the abdomen, being then covered carefully by a sheet of mackintosh; warm water enemas should be frequently given, and the long tube recommended by Mr. F. Smith should be useful; a similar instrument in human surgery, "the O'Beirne's tube," is well spoken of in impaction of colon.

The administration of opium has been decried by good authorities, but I have not found any reasons to discontinue its use; its normal effect would be to retard the peristaltic action and induce constipation; but in the painful condition of bowel existing in these disorders, I am of opinion that moderate doses will have no effect of the kind. The action of most other medicines is greatly affected by circumstances in a similar manner.

I conclude my few pages with the hope that you will freely give your opinions and experience on the main points of this subject.

Mr. ADRIAN JONES could not agree with the essayist as to crib-biters not

swallowing air; if they did not do so how could they swell out so enormously in so short a time? He saw no reason why a horse could not swallow air as easily as it did its food.

Mr. HURNDALL, referring to the impaction of the colon, said he had lately experimented with sulphate of eserine, injecting one grain into the jugular vein. He had tested this drug in the case of two horses since their last meeting; one case was that of an aged brewer's dray-horse, which had had no action of the bowels for some thirty-six hours. Some two hours before he (Mr. Hurndall) visited the horse, the man in charge had, on his own responsibility, exhibited a six-drachm aloetic ball. He at once injected a solution of the drug, and it took effect ten minutes afterwards. He supposed there were sufficient fæces passed to fill two bushel measures. The other case was that of a van-horse which had had no action of the bowels for twenty-four hours; three-quarters of a grain of this drug was injected with almost precisely the same result. In each case, from ten to fifteen minutes after the administration of the drug, the horse spread out his hind legs, and there was a quivering of the large muscles, which continued about three or four minutes before there was an evacuation. In the first case the fæces were very loose, while in the case of the second horse they were of normal consistency. The action of this drug seemed to him very remarkable from the rapidity of its action. One point of interest with reference to the first case was, that about twelve hours after the action of the drug there was the usual result from the action of the ball which had been administered previously.

In reply to Mr Raymond, Mr. HURNDALL further said that he simply used an ordinary hypodermic syringe, such as is used in human surgery, with a small needle; his assistant pressed on the jugular vein with his fingers as low down as possible, and when that vessel was sufficiently distended he introduced the syringe, and the assistant having slowly removed the pressure of his fingers he discharged the syringe in the usual way.

Mr. CATON pointed out that eserine was one of the active principles of physostigma, which drug he had used on two horses by injecting it into the trachea. He used one drachm, which was considerably in excess of the quantity usually administered; but although its injection caused an enormous amount of unpleasantness and violent pain for nearly half an hour, no evacuation of fæces took place until twelve hours after its administration in either case. The worst kind of cases he had to deal with were cases of Torsion, about the cause of which opinion seemed to be divided. He was certain that strangulation of the intestines was more frequent in London than in country horses, and he could not understand why this should be. With one horse he tried to prove to the owner, who had a large stud, that rolling did not produce strangulation, and he had him walked about until he died. This horse was never off his legs; yet a *post-mortem* showed that his intestine was twisted. He was personally perfectly satisfied that rolling was not the cause of Torsion.

Mr. HURNDALL remarked that using physostigma was not the same as using sulphate of eserine, which was the active principle of physostigma in the form of a soluble salt, and when used by itself in this form, it acted in a manner peculiar to itself, and much more decidedly than physostigma operated; therefore he would warn members not to expect the same result from the use of physostigma. He would like to remark with reference to "Wind-sucking," that he considered the theory brought forward by Mr. Broad perfectly feasible, and it had suggested itself to his own mind whether the mucous membrane of the intestinal tract did not secrete gases; and that, by the administration of remedies to restore the mucous membrane to a healthy condition, it would obviate the difficulty due to the secretion of gas. This opinion is held by some members of the

medical profession with respect to the human subject, and why not, therefore, the lower animals?

Mr. HUNTING said that it appeared to him their greatest difficulty was forming a correct diagnosis in Intestinal Disorders. Mr. Broad mentioned six different conditions of the colon, and to those might be added many others; it was a moral impossibility to differentiate between some of these until they arrived at the *post-mortem* stage, which was a little late. (Laughter.) But impaction of the colon was in many cases diagnosable. He took it that those cases in which horses showed acute pain which was almost continuous, and which was not accompanied at first by a very great rise in the number of the pulse, were very suggestive of impaction of the colon; and he thought they could assist their diagnosis very considerably by a rectal examination. In all these disorders one ought never to neglect the examination per rectum. Having arrived at the pathology of their case, then came the question of treatment. Physostigma certainly did have an action somewhat resembling that just given by Mr. Hurndall. He was a very strong believer in the administration of aloes in all cases in which he was not satisfied there was strangulation, and he never hesitated, at the commencement of the case, to administer a five or six-drachm ball. He did not think it mattered whether they gave their aloes in solution or in a ball. From an experiment he made some years ago, he found that the ball was, at any rate in the ordinary stomach, dissolved within an hour. Again, they would find, as he did, there was a cessation of pain about half an hour after administering a dose of physic. Sometimes they were called to a case that they had not seen early enough, and they would not therefore like to resort to this treatment. He did not know whether he was right, but in such cases he administered nuxvomica every three hours. He had found this treatment very efficacious in some cases. Then there was the cause of twist. It seemed almost impossible to arrive at the conclusion that it was the effect of rolling. Certain horses would roll about in all directions, lie on their backs and in all sorts of positions imaginable, and have no twist; at any rate, they did not die. He could not understand how it could be said that it was impossible for a horse to swallow air; it seemed to him that the muscles of the tongue and pharynx were just as capable of forcing a charge of air down, as the stomach was of forcing the air upwards; if the filling up were due to the decomposition of food, as soon as they got rid of one lot they would have another, and so on continually. He protested against Mr. Hurndall's theory of the secretion of the gases by the mucous membrane, and thought it was rather going out of the way for a cause when they had a fermenting mass present which accounted for it much easier.

Mr. ROGERSON then showed a large number of very interesting intestinal calculi, and gave the history in each case; he further remarked that he quite agreed with Mr. Caton, that rolling was not the cause of twisting of the intestines. During the last eight years he had a number of such cases come under his notice, and with the exception of two, all the horses were so secured as to be unable to roll.

Mr. SHAW also supported the view that rolling was not the cause of Torsion; out of twenty-six cases which had recently occurred in his practice, fourteen were kept tied up from the commencement of the attack until they dropped down dead. He thought that Torsion occurred more generally in mares than horses, and said that small ponies rarely suffered from twisted intestine. He quite agreed that the great desideratum was to be able to diagnose accurately; it was impossible to diagnose correctly until the horse had been ill for some time, and had shown a variety of symptoms. He did not know of an antispasmodic which would keep a horse quiet, for any length of time. He thought that some operation ought to be devised for the

relief of Torsion, and he hoped the College would lead the way. The operators at that institution did not operate under the disadvantageous circumstances which a private practitioner did.

On the motion of the HON. SECRETARY, seconded by Mr. RAYMOND, the further discussion on the subject was postponed until the next meeting.

Mr. ADRIAN JONES then submitted a model of the bust of the late Professor Robertson, which had been executed by Mr. Birch to the order of the students of the Royal Veterinary College, and suggested that a replica of the bust might be placed in the Royal College of Veterinary Surgeons. He also pointed out that he was in a rather unfortunate position, as he was pecuniarily responsible to Mr. Birch, and the promised subscriptions of some of the students were not forthcoming.

The feeling of the meeting seemed to be that the likeness of the late Professor was excellent.

SIDNEY VILLAR, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE annual meeting of the above Association was held at the Queen's Hotel, Leeds, on February 1st, the President, Mr. W. Lodge (Dewsbury), in the chair, and there were also present the following members:—Professors Williams and Axe, Messrs. G. E. Bowman, A. W. Mason, McCormick, Geo. W. Carter, Jos. Carter, P. Carter, A. W. Briggs, G. Scott, J. Atcherley, J. W. Anderton, H. Pollard, H. Snarry, Thos. C. Toope, Joe Clarkson, M. Robinson, A. E. Hanson, Philip Deighton, Frederick Danby, Thomas Pratt, G. T. Pickering, G. H. Scott, Hy. Cooper, and the Secretary.

The following gentlemen were present as visitors.—Messrs. C. Phillips and J. D. Edwards, of the A.V.D.; Messrs. E. Faulkner (President) and A. Leather (Secretary), of the Lancashire V.M.S.; Mr. Longhurst (Port Inspector at Hull), M. Ustrupp (Port Inspector at Copenhagen), Dr. Goldie (Medical Officer of Health for Leeds), and numerous others.

The minutes of the previous meeting were read and confirmed.

The only letters of apology for non-attendance were received from Messrs. Bale, Fletcher, and Schofield.

The President then read his inaugural address as follows:

Mr. VICE-PRESIDENT and GENTLEMEN,—Allow me to thank you sincerely for having done me the honour of electing me your President for the coming year. I assure you that when I look around me and see so many gentlemen present, who are much more qualified to occupy such an important office, I feel almost afraid that I shall not be able to do credit to your choice, but I crave your indulgence, and trust that you will do your best to assist me in making our meetings pleasant and instructive to all parties. I have thought that it might not be out of place if I had to take a short review on the object of our Society, and on the profession at large, touching upon a few subjects which particularly interest us as veterinary practitioners. As I have no doubt some of you are aware, this Society was first founded by a few gentlemen in 1863. Some of them I am pleased to see are present with us to-day. Its object being to be the means of promoting a better feeling of amity and mutual consultation among members of the veterinary profession, and to elevate our social standing, to discuss scientific topics, and to further the interests of the profession at large, I am sure that all present will agree with me, that we members of 1889 owe a great debt of gratitude to those gentlemen, who, with great trouble and inconvenience to themselves, were the means of founding such a beneficial Society to the veterinary profession.

I have been a member of this Society for eleven years, and I have derived great benefit from attending its meetings, and I would take this opportunity

to ask all veterinary surgeons who are not members of this Society, and young practitioners especially, to become members, as they not only gain a great amount of useful information, but they meet a great many of their brother practitioners, which they would not have the opportunity of doing under any other circumstances; not only that, but it is the means of stimulating a good and friendly feeling amongst members from all parts. Gentlemen, if we do not respect each other how can we expect to gain the respect of the general public? we may try to elevate the profession in vain, unless we begin with ourselves, and I think, gentlemen, that we cannot do better than begin now at this meeting by helping each other to carry out our work in a systematic manner. I hope that you will not think me presumptuous in pointing out to you a few evils which are always liable to occur at such meetings as these; some may think them trivial, but in my opinion they are very important matters: I mean, for instance, members for want of thought may not at all times give their individual attention to the subject on for discussion; some may be talking to each other, to the great inconvenience of the gentleman introducing the subject, while others may, perhaps, introduce another subject before the one first introduced has been discussed upon. I know of at least one instance where this did actually occur, and perhaps it will not be out of place if I give you the particulars of this instance, and then you will see my reason for introducing this subject to you. A young practitioner had only been a member of a Veterinary Medical Society a short time when, in the course of his practice, he had a very difficult and peculiar case. He very naturally thought that he could not do better than bring it before the Veterinary Medical Society's meeting, which happened to be held on the following day, in the hope that he would be able to get some information respecting his case which would assist him out of his difficulty. He accordingly attended the meeting, laid his case before the members, and asked if anyone present would give him their opinion and assistance; but I am sorry to say that he never received any help, as some other gentleman was allowed to introduce another subject. The young member went home in disgust, and for some time did not attend another meeting. I sincerely hope that nothing of the kind will occur during the time I occupy this Chair as your President. I shall at all times most respectfully insist upon upholding the dignity of the Chair, not out of any feeling towards myself, but for the honour and credit of the Society. And now a few words respecting the veterinary profession. I would, in the first place, ask all veterinary surgeons at all times to uphold the dignity of the profession by their courtesy one towards another, although we may hold different opinions from them respecting any case or subject that we may be engaged in; not trying to outshine our professional brothers in the eyes of our clients, who, I am sure, will not respect us any the more for so doing. I would also ask you to keep up our fees. Some, on examining horses as to soundness, charge a guinea, while others only charge half-a-guinea. It is very unpleasant for any practitioner to examine a horse for a client, and when asked your fee tell him that it is one guinea; he expresses his surprise, and says that Mr. So-and-So only charged him half-a-guinea for the last one he examined for him. What is a practitioner to do? He must either take half-a-guinea or insist upon having his guinea; but what is the consequence if he does; he is told that his services will not be required any more, which puts many a practitioner into a peculiar position, as he perhaps cannot afford to lose his clients. I wish that some definite understanding could be arrived at, for if we were all of one mind the evil would soon be done away with, but this will never be remedied while some practitioners are ready to take any fee, no matter how small, so long as they get hold of the client. I am quite sure that it has a great tendency to lower the standard of the profession. With respect to a

few subjects which are at present occupying our attention, such as the inquiry that is now before us respecting what constitutes hereditary unsoundness in horses. I am of the opinion that no animals are fit for breeding purposes that are affected with Seedy Toe, Canker, Laminitis, Thrush, Navicular Disease, False Quarters or Weak Feet, Side Bone, Ring Bone, Splints, Lymphangitis, Grease, Curb, Thoroughpin, Bog Spavin, Bone Spavin, Shivering, Stringhalt, Roaring, Whistling, Broken Wind, Grunting, Ophthalmia, Gutta serena, Hernia, and Eczema. If we wish to get a better and sounder stamp of horses in our country we cannot be too particular in choosing our sires and dams, for, in my opinion, like, to a very great measure, produces like. I wish that the Government of this country would make it worth the while for our farmers to keep their best brood mares, instead of selling them to the foreigners to take abroad. You all know that the foreigners are able to give a much greater price for any good animals than our English buyers are. Why should this be allowed? surely we are as wealthy in old England as any other nation, and I am sure it would be of great benefit to the country at large if the Government had to buy a few first-class entire horses, and place them in different parts of the agricultural districts. I should also advocate veterinary surgeons being appointed as veterinary inspectors to examine mares before being allowed to breed from. I am sorry to say, if any one has got a mare too old or lame for much hard work, she is put to breeding purposes; therefore it is no wonder that we get so many diseased animals. I think it is also time the breeding of cattle was seen to, as I am afraid we shall soon be as poorly off for good sound cattle as we are for horses, which will not only affect us in our meat markets, but will also affect the health of individuals all over the country. You are all well aware what a great deal of our dairy stock are affected with tubercular disease. It is my opinion that cattle so affected are not fit for human food, especially when it has got beyond a certain stage. Then, look what a number of animals that are kept for milking purposes are nothing but skin and bone from being affected with this disease. Yet the owners are allowed to sell the milk that is obtained from them, which I am inclined to think does more harm to the consumers than even eating the flesh. I certainly think that all animals suffering from tubercular disease should be brought under the Contagious Diseases (Animals) Act, and compensation allowed to the owners, but the difficulty arises, how are we to diagnose the disease in its first stages? I have heard it said that you can do so by the aid of the thermometer. Some have gone so far as to state that if the temperature rises two degrees above the nominal stage you may safely say the animal is affected with Tuberculosis; that is not my opinion, as I am sure you all know that you may go into a mistle and examine twenty head of cattle, and you will find the temperature to vary from one to three degrees, and even more, and all the cattle may be perfectly healthy; not only that, you may drive a beast about in the yard for a short time, and I venture to say that the temperature will have increased during that time, even to a great degree. I should not consider that any Inspector of Meat had done his duty if he passed the carcass of a beast affected to any great extent with Tuberculosis. Then there is another matter which I should like to draw your attention to, but I trust that I am not trespassing too much on your patience—that is with regard to the hygienic arrangements of our cowsheds. I think that it is time some steps were taken to ensure better sanitary arrangements in some of our dairy sheds and farms. It must have a very bad effect on the milk where a lot of cows are kept in a very warm mistle, while not a single breath of air worth speaking about is allowed to penetrate the place, besides the badly drained places, where some of the cattle are plastered up to the udder with dirt. What is more likely to pro-

duce disease in the human being than milk from such dens of disease as those? Would it not be beneficial to the general public if such places were properly inspected and kept in a cleaner and purer state? I also think that some steps should be taken to prevent the spread of disease by milk being carried from dairies where infectious disease exists. We all know that there is nothing more liable to carry disease from house to house than milk. To prevent any such evil, I would advise all local authorities to compel milk vendors to have a separate place away from their house for the purpose of measuring their milk. I know that in some parts a law does exist compelling all cow-keepers to register their cowsheds; but this, I am afraid, is carried out in a very loose manner, simply because men are appointed as inspectors who, in my opinion, are not suitable for that office. How is it that we veterinary surgeons are passed over in the manner in which we are? even in the matter of cattle inspection under the Contagious Diseases Act, we have to be first called in by the police. I think it would be much better if cases were reported to the veterinary inspector in the first instance, he having the power to call in the aid of the police to see that his instructions are carried out to prevent the spread of the disease. I should also like to say a few words respecting the inspection of meat. I cannot understand why empirics should be appointed meat inspectors instead of veterinary surgeons. I think it is our duty for the good of the general public to call the attention of local authorities to the existence of this evil, and to urge upon them the great necessity for appointing properly qualified persons as meat inspectors; and who, I ask, are better qualified than veterinary surgeons to hold such an important office? If the public did but know what wretched meat is brought into some of our public markets and sold for human food, they would, I am sure, be anything but satisfied with the present existing arrangements. (Applause.)

On the motion of Professor WILLIAMS, seconded by Mr. FAULKNER, a hearty vote of thanks was accorded to Mr. Lodge for his admirable paper, and it was decided that there should be a discussion on the various points raised, at the next meeting.

Professor AXE delivered a lengthy address on the "Operation of Laryngo-Tracheotomy," and in the course of his remarks said: No apology will be expected from me in placing before you, as far as my ability goes, a subject which has recently caused much discussion, and to which great attention has been directed during the past few months. It will be in the memory of each and every one of you that a short time ago it was suggested by Dr. Fleming, both privately and, I believe, through his agency publicly, that great advantages to our horse population might be derived from an operation, the precise nature of which was not at that time expressed. We have, however, by communication with Dr. Fleming, been able to acquire a knowledge of the precise nature of the operation as it was in the first place suggested. It has, as you know, for its object to alleviate horses from that disabled condition which arises out of the disease known as Roaring. How far the first suggestion of Dr. Fleming succeeded we will not enter into now, but we will presently trace the operation as it was first suggested, and follow it through its various modifications, and leave it as it remains at the present time. No apology, I am sure, need be offered for any step which may be taken to contribute to the advance of comparative surgery. One cannot help but remember that laryngotomy is an operation which for many years has been performed to a greater or less extent by Continental operators, and I feel it as a reproach to some of us—not particularly to myself, but to the profession generally—that we have so tardily followed in the footsteps and endeavoured to emulate the examples of those who have declared from time to time that benefits did accrue from

this operation in relation to Roaring. I think we shall admit that we were slow to recognise the services of others, and, above everything, to follow their example. With regard to the nature of Roaring, it is not my intention to occupy your time by entering into that question, any more than to say that it appears to consist—the sound appears to arise out of the displacement of a certain part of the mechanism of the larynx, resulting in the diminution of the aperture, and consequently an obstruction in the process of respiration. That disarrangement might be subject to another condition. It might consist of the diseased condition of the arytenoid cartilage and the relaxed condition of the vocal cord, by which the orifice, the laryngeal orifice, becomes diminished, and consequently an impediment put in the way of a free and efficient respiration. It would be desirable, of course, on going into the treatment of an affection of this kind to admit the cause and endeavour to remedy the effect; but inasmuch as our advances in therapeutics have not enabled us as yet to understand in any intelligible sense the causes giving rise to Roaring, we have to take advantage of any method or means of removing the effect of the cause from which the disease arises. We have endeavoured for many years to remove this effect in a very palliative way by making an artificial orifice in the course of the trachea, and introducing tracheotomy tubes, and so affording temporary relief to our patient. The aim and object of the operation which has been brought so forcibly before us by Dr. Fleming, is not to make a temporary improvement in the condition of our animal, but to effect a permanent condition of improvement. How far that has or is likely to succeed is told us by Dr. Fleming himself, and he is responsible for the statement. He assures us on a very large experience, which should command credit and trust from us, that no less than seventy horses have been operated upon—those employed in the service of the country—and that ninety per cent. of those animals have been permanently cured.* Starting with that proposition, I think we are warranted in using our every endeavour to not only generalise this operation, but to consolidate it; and, if possible, to improve it. It would be idle on our part if we were to sit down and be satisfied with what has now been done, because, as I have already said elsewhere, that which might seem to be an efficient operation to-day, may be to-morrow voted a vicious and unnecessary mutilation. I look forward to the time when we shall regard the operation of to-day as a mutilation and violent dismemberment. I think there will be forthcoming some means of effecting the end we have in view by very much less heroic methods than those I am about to describe to you now. It might be thought I should endeavour to enlighten you upon the history of the operation of laryngo-tracheotomy—it might be thought it would be a necessary part of this subject that I should tell you where the first discovery of it was made, or who first initiated the movement on the Continent; who first applied it to the disease of Roaring; how it came by degrees to the operation as we now find it. Why, gentlemen, it is a matter which has no interest for me. We will leave those who care to know it to fight it out for themselves. It is a matter which can be fought out in the drawing-room, but it is not one which it is desirable we should devote any great amount of attention to. What is of more consequence to us to know is, Is the operation capable of being performed with safety to the life of the animal? Is it efficacious to the disease to which it is applied? And, last, but not least, has it opened to us a field in surgery by which we may benefit in other directions than in respect to this operation for Roaring?

Professor AXE then proceeded to describe the operation as it is performed at present, and a description of which has appeared in the different journals

* This has never been so stated; it was anticipated that in time ninety per cent. would probably be cured.—ED. *V. J.*

for February. He concluded as follows: Now what is the result of all this? I am not in a position to tell you fully, but I am very hopeful. At present my cases which I have operated upon number about a dozen, but the time has hardly expired when we should consider it fair to judge as to the relief which has been afforded to the animals. I did venture, after an animal had been operated upon five weeks, to submit him to a gallop, and I was encouraged very much to hope that the operation would prove a success. When I say a success, I don't mean to imply that the horse will be enabled to perform every kind of work—sharp, fast work—without showing some abnormality of sound during work. My impression is that the operation will be capable of rendering useless horses useful, and if it does that I think we may claim for it success. (Hear, hear.) I fear that people will be led to expect too much of it. We will say that a man in Yorkshire desires an animal of his to be operated upon. The veterinary surgeon does as he is requested, and returns the animal. The owner will expect, of course, that there will be a diminution of the respiratory sounds, that the sounds will be abnormal, and that as time goes on the animal will be sound. One can hardly expect that, in all conscience. It is not to be expected; but I say if we can accomplish that one object—rendering horses which are absolutely useless, useful for the rest of their lives—then I think the operation is a success. I do not claim for the operation success simply on those grounds. We must take a wider view of it. I look upon it more than as a reflection upon the profession that we have not adopted it earlier, I look upon it as applicable where any laryngeal disease exists; we have learnt that the larynx is not that sanctuary which we have been led to regard it, and that it is as approachable as any other organ in the body, and it will now become a playground for us. We can open it and examine it, and if there is anything wrong we can put it right, as far as surgical science will allow us. Therefore I consider it is a great jump, and likely to prove in many cases of the greatest benefit. (Hear, hear.) There are other diseases to which the operation can be applied. All these things now are within our approach. I do not know there is anything more to say to you, except that in the course of the healing process it is desirable from time to time, after the first seven days, and after thirteen days, say, to cast the animal and inspect the interior of the larynx by means of the electric light. I do not claim anything for the operation except to have endeavoured to explain it. (Hear, hear.) I am not in a position to speak of the prospects of this operation for Roaring, but I have the strongest reasons to hope that it will prove of great benefit to our horse population. (Applause.)

Professor WILLIAMS said he was sure they were all greatly obliged to Professor Axe for the able manner in which he had laid the subject before them. He had stated the subject very carefully in all its bearings. He had had some experience of the operation. He was present at Newcastle when Professor Smith performed the operation as it first existed, viz., the removal of the vocal ligament, and the vocal angle of the arytenoid cartilage. That operation he considered a mistake, as it could not possibly in any way tend to the cure of Roaring. Shortly after the Newcastle meeting he had an opportunity of operating upon a Roarer, but the horse was not a bit better. After a month's interval he removed the whole of the arytenoid cartilage and the vocal cord. The case was now in hospital, and the animal was very much better. Before being operated upon, the horse was so bad that he could not go the length of the yard without giving signs of suffocation. The last time the animal was tried he went round the yard a dozen times, and showed very little distress or difference in his breathing. The sound, however, to a greater or less extent, was still there, and he was in the same position as Professor Axe; he would not give an opinion on that operation,

except that he believed, by its means, animals that were useless might be made serviceable. He did not expect anything more, but at the same time he thought there would be modifications made in the operation, so far as regarded the larynx. There would, he had no doubt, be endeavours made to bring about a contraction of some parts of it, so that the opening would become increased and fixed. He reminded the meeting that they were but just at the commencement of this subject, and it was quite possible that in the future, somebody would be able to describe at a meeting such as that, an operation for the cure of Roaring which was a complete success.

Mr. GEO. BOWMAN (Leeds), said he had looked forward with a great deal of interest to the address of Professor Axe, because he felt if the operation was a success, it would elevate the standard of veterinary surgery very considerably. As to making a horse useful, why, he said, if a horse was of no use and could not work, he was not worth above a £5 note; and even if such animal was operated on and still made a noise and did not work quite naturally, the operation did not look a success. Taking the case of hunters and race-horses, he thought if an animal could not run any better, or carry a man more satisfactorily, after the operation had been performed, then it was a failure.

Mr. FAULKNER said he saw the operation performed in Newcastle, and as a surgical operation, it was brilliant indeed. It showed how easily the larynx was accessible to surgical operation, and he believed the operation, as an operation, gave pleasure to all who witnessed it. Professor Axe had stated the case carefully and minutely, and was very cautious as to what he said was the result and upshot of the operation. One of the special features which struck him, was that Professor Axe demonstrated how easily they could get into the larynx, and how very careful they should be when they got there. The whole sum-total of the operation, to his mind, was that it was purely a matter of a monetary consideration. If they had a hunter under hand it was no use recommending that the operation should be performed, if they were not convinced that satisfactory results would follow. They wanted to see how they stood, what was likely to be the result, and unless they were sure of some definite result, they would not like to put the owner to the expense, the trouble, and the uncertainty of the operation. Professor Axe had said he did not know now far the operation would be successful, but that an animal that became useless would be rendered useful for certain purposes, and, on the other hand, they had the statement from Dr. Fleming, who said seventy cases had been operated upon and ninety per cent. were successful. Were those ninety per cent., he (Mr. Faulkner) would like to know, a success, or were they a partial success; were they perfectly right, or were they partially right. That was what they wanted to know, and what they must know; they must have some definite statistics to go on before they, as practitioners, adopted the operation and advised their clients to adopt it. (Hear, hear.)

Mr. PHILLIPS (13th Hussars) said he was glad to have had the opportunity of listening to the interesting address by Professor Axe, and he was surprised to hear that Dr. Fleming had been successful in 90 per cent. out of seventy cases. It was evidently time he began to operate upon some of the horses of the 13th Hussars.

Mr. G. CARTER said there was no doubt about the nicety of the operation, and it might serve to decrease the amount of noise a roarer emitted, but where a horse was a bad roarer he was not worth much, and if the operation was to do away with the noise altogether, to enable the horse to work as he would do if his larynx was unaffected, and as he did before there was any disease of the muscles of the larynx, then the operation would be such as he thought they would feel themselves justified in adopting. If, on the other hand, it only

altered a horse in such measure as to make him a less roarer than before, he (Mr. Carter) questioned whether the operation would be adopted by the profession generally. One result of the operation, however, was to show they could open the larynx and examine it when necessary. The momentous question in respect to Professor Axe's address was, Whether their clients would go to the expense of the operation, seeing that they could not guarantee a complete cure. Speaking with regard to the ordinary tampon-cannula tube, Mr. Carter said its insertion was so simple, the animal had to rest such a short time, and could work with it in; it was such a slight expense to the owner, and accompanied by a total absence of roaring, that if the operation they had heard so ably described was only partially successful, the tampon-cannula tube was superior to it for the purpose of rendering useless horses useful. He moved, "That the best thanks of this meeting be given to Professor Axe for the very able and instructive address he has given us this afternoon."

Mr. J. E. SCRIVEN, Tadcaster, seconded this.

Mr. MASON, Leeds, said he had seen the operation performed in London, and considered it was one which required a good deal of care. In performing it a good deal of assistance was required, and to his mind it became a question of £ : s. : d. whether their clients would care to expend the necessary amount of money. He had found that some clients did not care about parting with their money, even though assured of a great deal of success. (Laughter.)

The resolution was then put and carried unanimously.

Professor AXE, in reply, said: I can only say, if it has given the friends and members of this Society as much pleasure to listen to the few remarks I have made as it has afforded me to give them, you have derived very considerable pleasure indeed. It has been suggested that this operation is a question of monetary consideration, that it was a question of £ : s. : d. There are two lines to look upon the question, and if we regard it from a monetary point of view well and good. I look upon it from a surgical point of view. It has struck me, when it is suggested that a horse of the value of £5 is not a subject for the operation, that that is precisely the animal best fitted for it. For this reason, if we can hold out a hope of restoring that animal to a perfect state of soundness, we can confer to that animal the greatest amount of relief. The question of relief appears to me to be the foremost question in this subject. There are many horses that are quite disabled from work so long as this disease exists. If you remove that, the animal can perform the ordinary duties of an ordinary horse, and the only thing you can complain of is that he makes a little noise in his fastest paces. The horse which is only worth £5, if for the remainder of his life he can be made serviceable, is the animal you can confer the most benefit upon. I have operated upon horses that were not bad roarers, and I should not have expected to get the same amount of credit from them as from inveterate roarers. Of course, it is a question for you, as veterinary surgeons, to advise your clients on having the operation performed, having regard to £ : s. : d., as has been suggested; but if I were consulted as to the desirability of selecting between a horse that was a slight roarer and between a horse that was a bad roarer, I should say, Give me the bad roarer by all means; I can make an improvement in him, and I might damage the other and make a worse job of it. We are putting the cart before the horse when we say we should give our preference to those animals which are only slightly affected. It is not intended that the tampon-cannula tube shall be abandoned. It is a question whether the tampon-cannula tube is more applicable to a case coming into your hands than an operation of this kind.

The next business was the selection of a candidate for nomination to the Council.

Mr. JOSEPH CARTER declined to seek re-election, on account of his advancing years,

And on the motion of Mr. BRIGGS, seconded by Mr. SCRIVEN, it was unanimously agreed to nominate Mr. George Carter, of Keighley, for election.

It was also decided that the President and Secretary should co-operate with the Lancashire and Midland Counties Associations to endeavour to ensure his return.

THE ANNUAL DINNER.

At the conclusion of the meeting the members of the Association, together with a number of invited guests, sat down to dinner, the President, Mr. Lodge, occupying the chair, and the Vice-President, Mr. Bowman, the vice-chair. The repast was of an extremely *recherche* character.

After the usual loyal and patriotic toasts,

Mr. PHILLIPS, responding on behalf of the "Army, Navy, and Reserve Forces," said the Army Veterinary Department had been brought more prominently forward in recent years by the authorities. He was afraid his brethren outside the service had the opinion that army veterinary surgeons had an easy, jolly time of it. (Hear, hear.) It was a case of "hear, hear," because it was "here, here," only that it was anything of an easy, jolly life. (Laughter.) It was "here, here," for a short time, but when they went on active service it was far from being a jolly easy time. He maintained that the department, as a whole, was in a weak state, and referred to the movement for the formation of an Army Veterinary Reserve force. The rate of pay offered to the junior members of the force when they took the field might look tempting, but he thought those who had joined scarcely understood the amount they would have to expend. He believed after a six months' active service the reserves would find they had not many pence in their pockets over of what they had received. He believed the only way to remedy this state of affairs would be to grant the Reserve an annuity.

Mr. PICKERING (York) also responded, and said he did not think the Reserve Army Medical Department had been a success, and felt convinced that under existing arrangements, the Army Veterinary Medical Department would be characterised by no greater satisfaction.

The name of Mr. Edwards (10th Hussars, York) was also coupled with the toast.

The PRESIDENT gave the toast of "Royal College of Veterinary Surgeons."

Mr. JOS. CARTER, in reply, said for forty years he had been a member of the R.C.V.S., and he went on to sketch briefly the struggles and troubles attaching to the early history of the College. They had now, however, a College of their own free from debt. (Applause.) He was sure the College did all it could to bring the profession up to the highest possible level, and that the examiners had given every satisfaction.

Mr. BRIGGS (Halifax), in submitting "The Examiners," said he believed the examiners were, as a rule, a body of honourable men, and that at the present time they had the most able Board of Examiners it had ever been their lot to have in the profession. Students, as a rule, regarded the examiners with a certain amount of awe, and he felt convinced that in some cases that had not been inspired without good cause. (Laughter.) The subject of the appointment of examiners had of late caused some unpleasantness, and he felt that the time had come when the examiners who were paid should resign, and make room for those who were not.

Mr. T. FAULKNER, proposing "The Yorkshire Veterinary Medical Society," said he was sure they were all with him in wishing the Society every success and continued prosperity. (Applause.) If they took that day as an instance, he thought they must regard it as being in a very healthy condition. From his point of view the afternoon had been one of great interest, whether they

looked upon it as scientists or general practitioners, and the social portion of the gathering, indeed, had left nothing to be desired. (Laughter, and hear, hear.) It was not the first time he had had the pleasure of receiving the hospitality of the Yorkshire Society, and he sincerely hoped it would not be the last. Next to Lancashire, he believed the Lancashire fellows appreciated Yorkshire most. (Hear, hear.)

The PRESIDENT, in returning thanks, said they were obliged to Mr. Faulkner for his kind wishes and warm expressions of regard. Their Society had done good work in the past, and during his year of office he should use every possible endeavour to render the educational part of their proceedings as instructive and efficacious as possible, whilst leaving no stone unturned to strengthen their combination, and increase the good feeling existing among the practitioners in their country of broad acres. (Cheers.)

Mr. G. CARTER proposed "Veterinary Schools." He said they might take it that they were going to have a generation of veterinary surgeons far superior to the veterinary surgeons of the past. That was what they desired. They desired that the veterinary surgeon of the future should be a better educated and more able man than those who had gone before. He referred to the able services rendered as teachers by Professor Axe in London, and Professor Williams in Edinburgh, and said he could only give unqualified praise to all the teachers he had come in contact with. (Cheers.)

Professor WILLIAMS said he would rather prefer to appear before them that night not as a teacher, but as one of themselves, for he had the honour and privilege of being one of the fathers of the Yorkshire Society. (Hear, hear.) Five of them instituted the society; and he was sorry to say the minority—Messrs. Cuthbert and Broughton—had joined the great majority. Another, Mr. Dray, he saw the day previous in London. He was now a very old gentleman, but he always was a gentleman, and enjoyed the respect, not only of that society, but of the profession generally. (Hear, hear.) He (Professor Williams) was glad and proud to think that Mr. Jos. Carter was with them that night—(hear, hear)—and that they had selected his son George as their nominee for member of the Council. He had known him many years, and would support him to the utmost of his ability in the election. (Applause.) He (Professor Williams) had the honour of being the first secretary of their society, and he was proud to see, after twenty-six years, such a meeting as they had had that day. (Cheers.) He went on to refer to the valuable testimonial they presented him with when after some years he had to remove from Leeds to Edinburgh. His early struggles in Edinburgh were of no light description. For many years it was as the witches had it in *Macbeth*, "Double, double, toil and trouble," and although he was now only a representative of a private school, that school was a success—(cheers)—and the success of that school was due in a great measure to the support, the warm support, he had had from Yorkshire and Lancashire. (Applause.) He had over and over again realised the truth of the saying, "A friend in need is a friend indeed," for in Yorkshire and Lancashire they had been friends of his indeed. Professor Williams concluded in the following words, "I come here this evening, not so much as a teacher, but as one of yourselves, and I thank you most sincerely from the bottom of my heart for the kindness you have extended towards me during the struggle. The struggle is over, gentlemen—(cheers)—and I believe the end will be a calm and peaceful one, and that has been mostly brought about by your generous support. As a teacher I have endeavoured to do the best for my students, and if I have had to work hard both night and day to make both ends meet, I am proud to say that I have at last accomplished what I set myself to do; and that it has been in no small measure owing to the support of this society, and of the neighbouring county of Lancashire." (Cheers.)

Professor AXE said if there was one thing he was more proud of than another it was to visit the Yorkshire Society, and endeavour, as far as in him lay, to render some account of the work which formed the occupation of their daily life. He looked upon the occupation of teacher as the highest ambition of his life. (Hear, hear.) It was only 130 years since the whole of Europe was destitute of a teaching school with regard to veterinary medicine. When they looked back to the great amount of loss this country and other countries sustained for the want of the ready help which was now available to the owners of animals he thought they had a deal to congratulate themselves upon. (Hear, hear.) It was not long ago since the most humiliating excesses of inhumanity were perpetrated by what were then the representatives of their profession, and it was gratifying to know that the steps which had been from time to time initiated by the schools had lifted up the profession to the position it now held. (Applause.) To go back to the Cattle Plague, they must recognise a period when veterinary medicine had made very feeble advancement. It was subsequent to that time that the new school fought, and learning began to be disseminated through the profession. The old members of the profession coming in contact with the new lights of the profession began to feel themselves humiliated, because the schools had set forth new doctrines, new ideas, and new methods, and they felt themselves compelled to seek the counsel of the youth from the schools. It was to that new light that Veterinary Associations of this country owed their existence. He must say as a teacher in one of the schools that a great deal of credit was deserving to be recorded in favour of the schools. He did not say that any individual school had contributed to the success of veterinary medicine more than another, and he believed that schools were never on better terms with one another than they were at the present time. (Hear, hear.)

Mr. TOOPE proposed "The other Veterinary Medical Societies," and in reply Mr. LEATHER said there was a scheme on foot for the amalgamation of the various societies of England for the purpose of mutual protection, but it was not yet fully developed.

The other toasts were "The Visitors," proposed by Mr. MASON, and responded to by Mr. LONGHURST (Hull) and Dr. GOLDIE (Leeds); "The Ladies," proposed by Mr. P. CARTER, and replied to by Mr. JOE CLARKSON; and "The Secretary."

W. F. GREENHALGH, *Hon. Sec.*

ROYAL SCOTTISH VETERINARY ASSOCIATION.

A QUARTERLY MEETING of this Society was held in the library of the Royal Veterinary College, Edinburgh, on the 23rd January, 1889.

The PRESIDENT (Professor Walley) occupied the chair.

The following members were present:—Messrs. Cassells, Burnett, Jones, Reid, jun., Grossart, Greig, Macfarlane, McArthur, A. Baird, Fairbairn, and Professors Baird and McFadyean.

The minutes of last meeting having been read and approved of, the following gentlemen were nominated for election:—Messrs. Anderson, Young, Harle, Bird, Corwen, and King.

The following gentlemen were then elected as office-bearers for the ensuing year:—Andrew Reid, Esq., Auchtermuchty (President); Messrs. Campbell, Kirkcudbright; Fingzies, Lochgelly; and Cassells, Lanark, as Vice-Presidents.

Mr. Fairbairn, Cupar, was re-elected as Honorary Secretary and Treasurer.

The PRESIDENT then related a case of extensive Septic Cellulitis in the off foreleg of a cart gelding, as the result of a prick. After the removal of some

horn, pus was formed and evacuated; its liberation was followed in the course of two or three days by sloughing at the coronet, this healing up with free granulations, which looked beautifully healthy and devoid of fœtor; lameness had passed off, fever subsided, and all appeared to be progressing favourably when the leg swelled, the swelling rapidly extended to the subpectoral and subscapular connective tissue, and in course of a few days the limb became immobilised by the swelling, which was enormous, excessively hard, and exquisitely tender, the sufferings of the patient being extreme. In a few days the swelling had reached its height, imperfect fluctuation being detected. A free incision was made, and a quantity of purulent matter, having an abominable fœtid odour, evacuated. Two days after, a similar condition was detected at the posterior part of the leg, which was freely incised. The necrosed cellular tissue could be felt for a considerable distance along the subscapular region, and in the course of about ten days as much as one pound weight of dead tissue was removed. After removal of this tissue, the wounds rapidly assumed a healthy condition, swelling and febrile symptoms subsided.

Treatment adopted was continuous fomentations and the occasional application of stimulant and antiseptic liniment to the whole limb, sloughing parts thoroughly syringed with antiseptics, necrosed tissues being removed as they became partially detached from the healthy. Constitutionally, nutrients, stimulants and antiseptics were administered.

Three points of interest in this case were that Cellulitis became arrested in the subpectoral and subscapular tissue, that neither septic infection nor septic intoxication resulted, and that the inflammation spread rapidly up the limb, without producing any destruction of tissues below the elbow.

The PRESIDENT then showed specimens of œsophageal disease in sheep, which occurred in the practice of Mr. Harle, M.R.C.V.S., Coldstream, several sheep of the flock having died suddenly. The lesions appeared to be of a diphtheritic character.

Professor MCFADYEAN exhibited microscopical specimens of equine Tuberculosis and Actinomycosis.

Pleuro-pneumonia and Tuberculosis.

The adjourned discussion on the report of the Departmental Committee on Pleuro-pneumonia and Tuberculosis was then resumed by

Professor WALLEY, who began by remarking that the occurrences of the last few weeks in Edinburgh and its neighbourhood, pointed to the existence of Pleuro-pneumonia in districts where it was little suspected. Edinburgh was sometimes charged with being the greatest disseminator of that disease; it should rather be called the greatest receptacle of it. The number of cows which came into the city was enormous, probably greater than that which entered any other city in Scotland or the kingdom. He would be within the mark in stating it at 100 cows every week, brought in for dairy purposes. Adding these to the ordinary direct purchases it made a very large influx. They came from every district in which dairy cows could be had, as Cumberland, Westmoreland, Lancashire, Yorkshire, and the northern English counties, and those in the south of Scotland. The bulk of what came from Scottish districts were, however, from Ayrshire and Lanarkshire, though there were also supplies obtained from the whole of Scotland. A large and of late increasing number came from Ireland. This influx from all districts laid the Edinburgh district open to the introduction of the disease, probably more than any other city in the country. Glasgow, by getting its supplies from definite sources, mainly Ayrshire, was more favourably situated. The universal outbreak of disease in Edinburgh to which he had referred pointed to the necessity of instituting vigorous measures for the discovery of

its existing centres. This should be done by an efficient system of inspection, by making the notification of all forms of disease compulsory, and the abolition of all private slaughter-houses. As he had remarked in his address at the opening of the College in October, and long prior to that time, he thought, and now more strongly than ever, that compensation should be an Imperial burden. It was a great hardship that a community like that of Edinburgh should suffer for the sins of those for whom they annually paid immense sums in exchange for their contaminated dairy stock. He had attributed many previous outbreaks to cows brought in from Ireland and Cumberland, and from a knowledge of the facts connected with the present outbreak he was more than justified in saying the centres of the disease existed in these districts of which the authorities had no cognisance. In many cases the outbreaks were attributable to the so-called recovered cases of the disease, many of which probably still existed as remnants of the old system of dealing with the disease, and of undiscovered outbreaks. Several such cases had occurred in Edinburgh. He had the opportunity once more of directing their attention to a sequestrum which he had removed from the lungs of a bullock a few days ago, and in which a communication existed by means of a fistula between a large bronchus and the cyst cavity. The specimen was removed from the lungs of a bullock, one of a lot of eight sent from Fife to the Edinburgh slaughter-house for slaughter on account of their having been in contact with a diseased animal. It was a repetition of the old story, and another proof of the accuracy of a theory which it had been his privilege to promulgate some fifteen or sixteen years ago. It emphasised the dangers of playing with such an insidious malady, and of shutting their minds against the teachings of pronounced pathological and clinical facts. In reference to Tuberculosis being dealt with as a contagious malady he could only adhere to his repeatedly expressed opinions on the point, and he thought that in view of its extended prevalence, the delay in dealing with it as such was alike incomprehensible and indefensible. It was of sufficient importance when affecting the bovine and porcine species mainly, it was of vastly greater importance in view of the fact that its extension to equines was so abundantly proved. It was a disease to which no quarter should be given; its extermination was a war of races. Whether, by supineness or other faults equally reprehensible, the lower was still to be allowed to retain the mastery over the higher organism remained to be proved.

Professor MCFADYEAN said it was a fact at which everybody who had the interests of stockowners and the public at heart would feel gratified, that the measures at present in force promised to lead to the ultimate and not very remote extermination of Pleuro-pneumonia. There was already a satisfactory diminution in the returns of the disease, and they were enabled to hope that with vigilance on the part of Local Authorities a very few years would see the last of Pleuro-pneumonia in these islands. The present methods of dealing with it were of considerable importance. It was hard upon Local Authorities that they should be mulcted in very large sums for compensation through the laxity of a neighbouring Local Authority or stockowner in a neighbouring district. If penalties were always exacted in cases where infringements of the regulations were proved, there would be fewer cases of dishonesty in the way of destruction of animals that had been "in contact" than there was reason to believe was the case at present. Regarding Tuberculosis, he was one of those who believed that the public at large, and to a certain extent the medical profession, was at the present time in a condition of unnecessary panic. That might be described as the first stage of those who had brought under their notice for the first time that human Phthisis and Bovine Tuberculosis were identical, in that they were caused by the same bacillus, and it seemed almost natural for them to jump to the

conclusion that many cases of human Phthisis were of bovine origin. He was one of those who cherished the belief that that was not the case. Instances of human beings becoming infected from the Tuberculosis of cattle were extremely exceptional, and the question of the consumption of tubercular meat could hardly be described as an extremely important one from a public health point of view. It was different when one came to consider the consumption of tubercular milk. The two things stood on a different footing. Actual tubercular lesions in the parts of a carcase consumed were exceedingly rare. The existence of tubercles in the muscular system of a bovine animal were so rare that he never had seen an undoubted case. It was well that people did not eat their meat raw; indeed, it was consumed in general in a state very far removed from that. But even admitting that there might be bacilli in a beefsteak, if it was well cooked he did not think there need be any hesitation in eating it. Experimental pathology supported the view he had stated. There were on record almost innumerable cases of experiments in which animals affected had been inoculated with tuberculous meat; that was, inoculated of set purpose or fed with tuberculous flesh. In many cases they were not even fed, but actually inoculated with what were relatively enormous masses of meat juice taken from tuberculous animals. They took raw meat juice from animals that were undoubtedly affected with Tuberculosis in some of their viscera, and thus caused Peritonitis by inoculation in an animal so very susceptible as the guinea-pig. Thirty to forty such experiments had given only one single case in which the animal became tuberculosed. The question of the occurrence of Tuberculosis in the udders of milch cows was one of great sanitary importance. It was high time, and long past time, that public bodies took steps to remove this risk of infection from human beings. It was, he thought, quite possible to greatly minimise it by a proper system of inspection of dairy cows everywhere. According to a statement recently made by a member of the medical profession regarding the ability of veterinary surgeons to diagnose the disease in its several stages, the professor said he hardly thought the remark a slur at the time it was made, but rather an indication of gross ignorance on the part of the person who made it. He said this as a member of both the medical and veterinary professions. It was almost amusing that a medical gentleman in Edinburgh, who occupied a high position, should give expression in a public meeting to the belief that it was almost incredible that a veterinary surgeon could be able to diagnose every case, or almost every case, in cows. If that was true he was inclined to think it was due to defective veterinary teaching, and that they might look forward to certain improvements being introduced in veterinary teaching. That also was a great exhibition of ignorance. If he had taken time properly to inform himself regarding the differences between bovine and human tubercle, clinically he would have found that it did not require a man of superhuman knowledge to diagnose a large number of such cases. As having had some experience, both in human and also in animal treatment, he demurred altogether to the statement that practitioners of human medicine were necessarily in any way superior in diagnosing cases of Tuberculosis. Medical men met many cases of Tuberculosis which they could not prove by a positive diagnosis, except after having themselves stained the sputum. In veterinary practice they were quite ready to take advantage of the advance of science, and Tuberculosis might be diagnosed by a microscopical examination and study of the discharge when they could get it; but they might have a most advanced form of Tuberculosis, and the animal not discharging any material which contained bacilli. There was a case in the knowledge of the President in which there had been extensive Tuberculosis in the peritoneum. It would have puzzled a medical gentleman to have asked him to diagnose

Tuberculosis in that animal during life. It had neither cough nor expectoration to indicate it. In concluding, Professor MCFADYEAN remarked that he was glad to have had the opportunity of saying what he had said, as a protest against the method of looking at veterinary clinical facts that some of the medical profession had. (Applause.)

Professor BAIRD, in the course of some remarks on Pleuro-pneumonia, said there were fewer outbreaks of the disease now than in past years, in consequence of the extensive system of slaughtering that went on. Considering the way that calves were now reared—brought forth in January, tied up till the time of the grass in May, insufficiently exercised in joint and lung, all of which was contrary to a state of nature, he was of opinion that it might come on without any infection at all. He had come across isolated cases in which there was no proof of the animals being in contact with others that might produce the disease. So long as cattle were reared as they were and moved about, there would be cases of Pleuro-pneumonia. Byres should be built on the hospital system, with half-a-dozen cows in one place. If one took the disease the rest might be slaughtered, but as things were conducted at present, there was entailed a great loss to the country. Tuberculosis was said to be hereditary, for though the animals appeared to be in perfect health it might be in their system, and the question arose, where were they to be begin to stamp it out? They must just begin where the animals showed the symptoms, but where it was hereditary he did not see how they were to stamp it out.

Mr. REID, jun., Auchtermuchty, said that at his home they had a case completely isolated and could not determine its cause. When the cattle were slaughtered they got an encysted patch of lung. The cattle were bought six months before the disease made its appearance.

Professor MCFADYEAN, recurring to the subject of heredity, said it was an error to regard it as accounting for Tuberculosis. It had been abundantly proved by extensive statistics covering many thousands of cases of examination of calves, that the existence of Tuberculosis in calves at birth was extremely rare. There were not more than half-a-dozen undoubted instances on record. Many so-called cases were instances in which calves were found to be tuberculed two months after birth, which was a period quite long enough to permit of infection being communicated from other animals by cohabitation or breathing the contaminated air of affected animals. There might be an increased predisposition, which, of course, might be hereditary.

Professor WALLEY thought he might mention an occurrence which showed how little people knew about Tuberculosis affecting their cattle. At the residence of a nobleman in Scotland, there were six or seven cows among those which were giving milk for his own private use which exhibited signs of Tuberculosis. This was pointed out by a veterinary surgeon, but it was not till it was brought under the direct notice of the chamberlain that any steps were taken. Immediately every one of the cattle was slaughtered, and they were found to be bad cases. In reference to the communication of Tuberculosis to the human subject from the flesh of animals, he thought sometimes there was a probability of its being so communicated. Even if there was only one solitary case in a whole community, he should look upon that as to a certain extent dangerous. Another element was the lymphatic glands. One never knew when the lymphatic glands were affected. There was on record a case in which Tuberculosis had been produced by inoculation. Regarding Professor Baird's remark as to the probable origin of Pleuro-pneumonia, he would not like it to go forth uncontradicted by him (Professor Walley) that the disease might occur without contact with affected animals. He thought they could hardly entertain that supposition. He was convinced there was always a source of contamination somewhere.

The discussion was then closed.

The CHAIRMAN intimated that a discussion on "*Purpura Hæmorrhagica*," which was to have been introduced by Mr. Barclay, would, in consequence of that gentleman's inability to be present, be taken up at a future meeting of the Society.

W. D. FAIRBAIRN, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

At the Monthly Council, held on February 6th, Sir JOHN THOROLD stated that Professor Brown had presented to the Committee an interesting and valuable report from the Royal Veterinary College, describing in detail the cases of diseased cattle, sheep, and swine admitted to the College during 1888; the inquiries into outbreaks of disease conducted by the officers of the College, and by the Society's provincial veterinary surgeons; and the experimental inquiries conducted during the year into the nature of certain diseases—*e.g.*, Actinomycosis, Tuberculosis, Swine Fever, Anthrax in Swine, and Lung-worm in sheep and calves. It was proposed to publish this report in the next number of the Journal. Professor Brown had also presented the following report :—

"PLEURO-PNEUMONIA.

"This disease has lately been more prevalent in Edinburgh and its vicinity than in any other part of Great Britain. Several of the outbreaks are attributed to cattle sent to an Edinburgh sale-yard in December last by a dealer in Cumberland, on whose farm the disease was afterwards reported. Other outbreaks in Cumberland are probably due to the same cause, and some animals from one of the Cumberland infected farms have been sent into Northumberland. In the first four weeks of the present year there have been thirty-one outbreaks in Great Britain, as compared with forty-four in the corresponding period of 1888. In Ireland there have been only four fresh outbreaks this year, all of them in the North and South Dublin Unions. About this time last year the fresh outbreaks in and around Dublin averaged about five per week.

"ANTHRAX.

"There have been six outbreaks of this disease in England, but none in either Wales or Scotland since the beginning of the year. This is about half the number reported in the corresponding period of last year.

"SWINE-FEVER.

"This disease maintains about the same rate of prevalence as this time last year. There have been 328 fresh outbreaks reported this year, and 2,071 swine attacked. Only 998 of these were killed, 918 died, and 150 recovered. The disease is now more prevalent in Oxfordshire than in any other part of England. The cause of this seems to be the keeping alive of diseased pigs. No less than 192 remained alive at the last date of the last published return."

The Committee recommended the payment of the first moiety of the grant to the Royal Veterinary College for the current year; and that £100 be granted to Professor Brown for further experimental inquiries into Lung-worm, Black-quarter of calves, Tuberculosis in cattle or pigs, and other diseases of farm stock. The question of the fees now payable by members for the examination of viscera for poisons had been considered, and the Committee recommended that such examinations be in future conducted at the Royal Veterinary College, the fees chargeable being reduced as follows :—Examination for metallic poisons, £1 [instead of two guineas]; complete examination for metals and alkaloids, £3 [instead of five guineas]. The Committee recommended that Mr. James Smith, of Huntingdon, be appointed Provincial Veterinary Surgeon for Hunts. A correspondence with the Royal Dublin

Society on the question of the cross-channel traffic in cattle having been read, it had been resolved that the Chairman, Colonel Kingscote, and Mr. Jacob Wilson be deputed to confer with the representatives of the Royal Dublin Society and the Highland Agricultural Society, and if necessary to join them in a deputation to the Privy Council Office. The examiners on the diseases of animals of the farm other than the horse in the examinations for the diploma of the Royal College of Veterinary Surgeons held last year had reported that the following gentlemen had attained the greatest distinction—Mr. T. Dawson, Pontefract, Yorks; and Mr. J. H. Harris, Whitecross Street, Monmouth. The Committee therefore recommended that the Society's medal be given in silver to Mr. Dawson, and in bronze to Mr. Harris. It was recommended that Mr. Darby and Mr. Gorringe be added to the Committee.

Mr. WAKEFIELD asked whether Professor Brown's report included particulars of a recent outbreak of Pleuro-pneumonia in the county of Cumberland. There had been an introduction of the disease into that county, which would involve the slaughter of 350 head of cattle. What was the most recent information on the subject, and was the disease traced to any previous outbreak?

Professor BROWN replied that the latest information was that the disease extended from a particular sale-yard, and the dealer concerned seemed to have taken it into a very considerable number of places. There was no doubt whatever that the Cumberland outbreak was very severe, but most energetic measures were being taken to suppress it.

The Duke of RICHMOND and GORDON suggested that the Council should urge upon the authorities of the Privy Council that the time had now arrived when it would be expedient that the Government should take power to slaughter animals and pay for their cost out of the Imperial funds. (Hear, hear.) If that was taken in hand by the Government, it would not, looking to the very small amount of Pleuro-pneumonia there was throughout the country, be difficult or take a very long time before it could be thoroughly stamped out. If left to the efforts of the local authorities, the disease might not be suppressed for a considerable period. He hoped that Professor Brown would acquaint the Lord President of the Council with what had been said that day, and suggest that it would be a very opportune time for the Government to take the matter into their own hands.

Professor BROWN said that his Grace was fully aware that what he had said agreed with his own (Professor Brown's) views. The representation which it had been suggested he should make he assured the Council he had already made, and he thought he was justified in saying that the whole subject as to the payment of compensation out of the Imperial funds was now before the Cabinet.

Mr. WAKEFIELD pointed out that this was all the more reason why the Society should act at once.

Mr. JACOB WILSON said he understood that the Central Chamber of Agriculture had at their meeting yesterday decided to move upon exactly the lines suggested by the Duke of Richmond.

Mr. WAKEFIELD said that 350 head of cattle were going to be slaughtered at one fell swoop, and the benefits of that slaughter would extend to the rest of the country. He did hope that something would be done in the direction proposed by the Duke of Richmond.

Mr. CHAPLIN thoroughly endorsed what had fallen from the Duke of Richmond and Mr. Wakefield. He thought it was a question whether it would not be desirable for a formal representation to be made from this Council on the subject. No doubt the present was a very favourable opportunity of getting rid of Pleuro-pneumonia once for all for the benefit of the whole community.

Mr. JACOB WILSON thought that such a representation at the present time

would have a very considerable effect upon the Government. What was urged by the Duke was in complete conformity with the recommendations of the Departmental Committee which sat some time ago, and over which he had the honour of presiding, and it was also the opinion of the majority of the witnesses that were examined from all parts of the kingdom.

His Royal Highness the ACTING PRESIDENT asked whether the Council thought it desirable to take any present action, either by joining in a deputation or by resolution. He thought the latter would be an excellent plan if the Duke would make a motion on the subject.

The Duke of RICHMOND said that from his official knowledge and experience at the Council Office he thought the best way would be to pass a resolution, and request His Royal Highness, as Chairman, to forward it to the Lord President of the Council.

The PRINCE of WALES having signified his assent to the course proposed, it was moved by the Duke of RICHMOND, and seconded by Mr. CHAPLIN, M.P. :—

“That the Royal Agricultural Society of England beg leave to call the attention of Her Majesty’s Government to the present disastrous outbreak of Pleuro-pneumonia in the county of Cumberland, and to urge that in the opinion of the Council the time has arrived when the slaughtering of animals affected with Pleuro-pneumonia should be undertaken by the Government, and that the cost thereof should be defrayed out of the Imperial funds.

“They believe that the present moment is peculiarly favourable for the prosecution of this object, and that it may probably be now attained with the smallest sacrifice and the least expense.

“They are of opinion that if this is done a disease so injurious, not only to the producer, but to the consumer, will be stamped out. They consider that the expense of so great a benefit to the whole community should not be borne by the locality.”

A discussion arose as to the desirableness of specially alluding in the resolution to the outbreak in Cumberland.

Mr. DENT expressed a doubt as to whether there was any special importance in the word Cumberland, remarking that the facts were that the disease was reduced within a very small compass, and that it was desirable the central authorities should take the matter in hand.

Sir MASSEY LOPES concurred in this view.

Mr. JACOB WILSON thought there *was* an element of importance in the word Cumberland, as showing the insidious nature of the disease, the county being under conditions in which they thought themselves safe.

Professor BROWN said that the object in retaining the reference to Cumberland was that that county was very strictly administered. They habitually kept free from the disease, and the fact of these extensive outbreaks there showed that no county, however strict, was safe under the present system. The all acted quite independently of each other, and it was therefore impossible to provide against these contingencies unless by a central authority.

Mr. WAKEFIELD was in favour of the name of the county being retained.

The Duke of RICHMOND said he knew from his own experience at the Council Office that no county in Great Britain took more care than the county of Cumberland to prevent the introduction of disease, under the energetic administration of Mr. Dunn, the Chief Constable of the county.

His Royal Highness the PRINCE of WALES thought that in the interest of stock-owners the case should be represented to the Privy Council as forcibly as possible.

Eventually the resolution was carried unanimously in its original form, and a copy of it was at once forwarded by his Royal Highness the Acting President to Lord Cranbrook.

Army Veterinary Department.*Gazette*, February 5th.

The under-mentioned Veterinary Surgeons on probation to be Veterinary Surgeons, ranking as Lieutenants. Dated 18th July, 1888:—

Francis B. Drage.

John H. Jackson.

We chronicle the following item of news from Suakim, under date of February 7th, relative to Lieutenant Beech, 21st Hussars, now attached to the Egyptian Cavalry, and formerly in the Army Veterinary Department:—

"A hand-to-hand encounter occurred to-day between Lieutenant Beech and two Dervishes. The Lieutenant was ahead of the usual patrol when he was attacked by two of the enemy, armed with swords and spears. He killed one, but was nearly being overpowered by the other, when an Egyptian soldier came to his rescue, and shot the Dervish dead. The two camels and the arms belonging to the Dervishes were brought into Suakim."

A later telegram says:—"As inaccurate versions of Lieutenant Beech's encounter with the Dervishes have been in circulation, I think it right to send the correct one. On Thursday, when Mr. Beech was out with the Egyptian Cavalry Patrol, he came across two Dervishes at a moment when he was separated by a considerable distance from the Cavalry. Not expecting any resistance, he offered the men quarter, but they suddenly attacked him. In the struggle which followed, he killed one with his sword and wounded the other with his revolver. At this moment an Egyptian came to his assistance and gave the second man his *coup de grâce*."

We intimated in the *Journal* for January last, that certain alterations of an important character had been made in the regulations for this branch of the Service, and the following extracts are taken from the Regulations for the Veterinary Department as amended by Army Order 113 of 1889:—

CANDIDATES FOR ADMISSION.

1. Candidates for admission must make application to the Principal Veterinary Surgeon of the Army, Horse Guards, War Office, London.
2. The minimum age of Candidates is 21 years, and the maximum age 26 years, except in special cases or on urgent occasions, when the latter limit may be exceeded. Candidates must be unmarried.
3. Every Candidate must be a Member of the Royal College of Veterinary Surgeons.
4. He will be required to forward the following certificates, prior to examination, to the Principal Veterinary Surgeon, War Office:—
 - (a.) A certificate of birth or baptism, or other satisfactory proof of age.
 - (b.) Certificates of moral character from clergymen or others in a position to testify, and whose evidence may be deemed satisfactory; also from the Principal and Professors of the College at which the Candidate has been professionally educated.
5. Every candidate will undergo a medical examination, in order to ascertain his state of health and physical fitness.
6. The professional examination will be in two parts, written and practical. The written examination will embrace the following subjects:—

(*a.*) Anatomy. (*b.*) Physiology. (*c.*) Histology. (*d.*) Pathology, horse. (*e.*) Pathology, cattle. (*f.*) Surgery. (*g.*) Chemistry. (*h.*) Materia Medica. (*i.*) Toxicology. (*j.*) Botany. (*k.*) Sanitation. (*l.*) Dietetics. (*m.*) Principles of shoeing.

The practical examination will be conducted by a Board of Veterinary Officers, and will include—

(*a.*) Examination of horses as to soundness. (*b.*) Examination of horses as to age. (*c.*) Exterior of the horse, with regard to points, marks, seat of disease, conformation necessary for different kinds of military service, etc. (*d.*) Operations. (*e.*) Prescribing, compounding, and administering medicines.

EXAMINATION FOR PROMOTION TO THE GRADE OF VETERINARY SURGEON (1ST CLASS).

The examination for promotion to the grade of Veterinary Surgeon (1st Class) will be a written one, and will include the subjects in the examination for admission to the department, with the addition in Subject *d* (cattle pathology) of the diseases peculiar to the camel and elephant, in Subject *k* of sanitation in India, and in Subject *l* of dietetics in that country.

EXAMINATION FOR PROMOTION TO THE GRADE OF INSPECTING VETERINARY SURGEON.

The examination for promotion to the grade of Inspecting Veterinary Surgeon will be a written one, and be based chiefly on subjects connected with veterinary administrative duties (as laid down in the Army Veterinary Regulations) at home and in India, and also with regard to administrative duties in the field.

The following extracts are taken from the Royal Warrant relating to Pay, etc., 1887, as amended by Army Order 473 of 1888:—

The pay of the Officers of Our Veterinary Department shall be at the following rates:—

Principal Veterinary Surgeon, £850 a-year, inclusive of all allowances.

	Daily.		
	£	s.	d.
Inspecting Veterinary Surgeon	1	5	0
After 25 years' service	1	7	0
" 30 "	1	10	0
Veterinary Surgeon of the 1st Class	0	16	0
<i>If promoted to that rank after the 31st May, 1888</i>	0	15	6
After 5 years' service in the class	0	18	0
<i>If promoted to that rank after 31st May, 1888</i>	0	17	6
After 10 years' service in the class	1	0	0
" 15 " " "	1	2	0
" 30 years' total service	1	4	0
Veterinary Surgeon on appointment, £250 a-year.			
* *			

The pay of Officers of Our Departments shall be issued monthly in arrear. An Officer of a department of Our Army not having honorary rank shall rank as follows for purposes of precedence and other advantages attaching to corresponding military rank; but this shall not (* * *) entitle him to military command of any kind, to the Presidency of Courts-Martial, Courts of Enquiry, Committees, or Boards of Survey, or to precedence in his own department over Officers holding a superior departmental rank:—

* * * * *

AS COLONEL—

* * * * *

Principal Veterinary Surgeon.

AS LIEUTENANT-COLONEL—

* * * * *

Inspecting Veterinary Surgeon acting as Principal Veterinary Surgeon in India.

Inspecting Veterinary Surgeon.

AS MAJOR—

* * * * *

Veterinary Surgeon, 1st Class, after 10 years' service as such, or under 10 years' service if allowed to rank as Major, under Article 417, for distinguished service in the field.

AS CAPTAIN—

* * * * *

Veterinary Surgeon, 1st Class, under 10 years' service as such, except as provided in Article 417.

AS LIEUTENANT—

* * * * *

Veterinary Surgeon.

A Candidate for Our Veterinary Department shall be required to possess the diploma of the Royal College of Veterinary Surgeons, and to pass an examination before a Board of Military Veterinary Surgeons; also to fulfil such further conditions as may be prescribed from time to time by Our Secretary of State.

A Candidate who has proved after examination that he possesses a competent knowledge of the required subjects, shall be appointed a Veterinary Surgeon on probation for a period of six months, at the expiration of which period, if his probationary service has been satisfactory, he shall, on the recommendation of the Principal Veterinary Surgeon, and with the approval of Our Commander-in-Chief, receive a commission as Veterinary Surgeon for a limited period of 10 years, and the commission shall be antedated so as to embrace the period which the Veterinary Surgeon has passed on probation. If his probationary service has not been satisfactory, his services shall be dispensed with, and he shall have no further claim on the department.

The services of a Veterinary Surgeon, *appointed after the 22nd April, 1878*, may be dispensed with on the completion of 10 years' service, and he shall in such case be granted a gratuity under Article 1075.

A Veterinary Surgeon *appointed after the 22nd April, 1878*, who, after having served less than 10 years, is disqualified for duty by ill-health, certified by the regulated medical authority* to have been caused by the Service, may, at the discretion of Our Secretary of State, be granted half-pay, at the rates specified in Article 1048, for a period not exceeding six months at one time.

In special cases, in which the circumstances may appear to Our Secretary of State to call for exceptional consideration, such half-pay may be granted when the disability, though not caused by the Service, has been contracted in the Service.

At the expiration of the period of six months, referred to in Article 403, if the Veterinary Surgeon be able to resume his duties, he shall be entitled to complete his term of 10 years' service. If he be unable to resume duty, as

* As defined in Article 1210.

If a Veterinary Surgeon, *appointed after 22nd April, 1878*, be unable to complete his 10 years' service from any cause other than the reduction of establishment or ill-health, as specified in Article 403, he shall be allowed not more than six months' leave without pay, at the expiration of which period, if unable to resume duty, his services shall be at once dispensed with, and he shall have no further claim on the department.

A Veterinary Surgeon shall be promoted to the rank of 1st Class Veterinary Surgeon on completing 10 years' commissioned service, including at least three years abroad, provided he be recommended for promotion by the Principal Veterinary Surgeon.

All promotion from the rank of Veterinary Surgeon to that of 1st Class Veterinary Surgeon, and from the latter rank to that of Inspecting Veterinary Surgeon, shall be given for ability and merit upon the selection of Our Commander-in-Chief, with the approval of Our Secretary of State, and the grounds of such selection shall be stated to Us in writing and recorded in the department. In all such cases the amount of service abroad shall be expressly stated.

Veterinary Surgeons, *appointed after the 22nd April, 1878*, may be permitted to retire on the completion of 10 years' service, with a gratuity under Article 1075, in cases in which such retirement may be deemed expedient by Our Secretary of State.

Rates of Half-pay.

Inspecting Veterinary Surgeon—								£	s.	d.
After 20 years' service	..	..	..	..	..	..	..	0	17	6
" 25 " "	..	..	..	..	..	..	..	0	19	0
" 30 " "	..	..	..	..	..	..	..	1	1	0
Veterinary Surgeon, 1st Class—										
After 15 years' service	..	..	..	..	..	..	..	0	10	6
" 20 " "	..	..	..	..	..	..	..	0	13	0
" 25 " "	..	..	..	..	..	..	..	0	16	0
Veterinary Surgeon—										
Under 5 years' service	..	..	..	..	..	..	..	0	4	0
After 5 " "	..	..	..	..	..	..	..	0	7	0
" 10 " "	..	..	..	..	..	..	..	0	8	6
" 15 " "	..	..	..	..	..	..	..	0	9	6

VETERINARY DEPARTMENT.
Retired Pay.

	(1.) (2.) If retiring voluntarily.		(3.) If retired under Art. 409, or on account of age, or from dis- ability con- tracted in and by the Service.
	After 20 years' service on full pay.	After 25 years' service on full pay.	
Principa Veterinary Surgeon	Daily. ...	Daily. ...	Yearly 500%. Daily. £ s. d.
Inspecting Veterinary Surgeon—			
After 20 years' service	Not exceeding one-half the rate of full pay received at the time of retire- ment.	Not exceeding seven-tenths of the rate of full pay re- ceived at the time of re- tirement.	0 17 6
„ 25 „ „			0 19 0
„ 30 „ „			1 1 0
Veterinary Surgeon, 1st Class—			
After 15 years' service			0 10 6
„ 20 „ „			0 13 0
„ 25 „ „			0 16 0
Veterinary Surgeon—			
Under 5 years' service			0 4 0
After 5 „ „			0 7 0
„ 10 „ „			0 8 6
„ 15 „ „			0 9 6

GRATUITY.

						£
If retired under Article 406a or 407	..	..	..	..	..	800
If retired under Article 404—						
After 5 years' service	..	..	..	..	..	400
„ 6 „ „	..	..	..	..	..	480
„ 7 „ „	..	..	..	..	..	560
„ 8 „ „	..	..	..	..	..	640
„ 9 „ „	..	..	..	..	..	720

An Officer shall not be entitled to the rate of retired pay fixed for his rank, under Article 1075, column 2, unless he shall have served three years in his rank, or 10 years abroad in all ranks, or five years with an army in the field. Failing one of these conditions, the Officer shall only be granted, on voluntary retirement after the services specified, retired pay at a rate not exceeding seven-tenths of the rate of full pay received by him before his last promotion.

Obituary.

THE deaths have been notified of Mr. W. B. Barrow, M.R.C.V.S., Newmarket, who graduated in 1868; and of Mr. H. J. James, M.R.C.V.S., Oxford, a graduate of 1842.
Professor Domenico Vallada, formerly director of the Veterinary Schools of Naples and Turin, died recently, aged seventy-six years. Among other works, he

was the author of one on Veterinary Jurisprudence, and a treatise on Sanitary Police.

The death of Professor Armbrecht, M.D., late of the Vienna Veterinary School, is also reported. His age was seventy-one years. He was the author of a work on Veterinary Surgery, was distinguished as an operator, and was also a good judge of horses and an able "exteriorist."

Notes and News.

ENGLISH AND FOREIGN HORSES.—There is a very great difference between the value of the horses we import and those exported from this country. The average value of the former for 1888 was only £16 14s. 10d., while that of the latter was £65 17s. 8d.—a price more than £7 a head above the average of horses exported in 1887. Canada received the greatest number of the horses we sent away, Belgium coming next, and Holland, the United States, and France following in the order here given. Canada gave the highest prices, the average being nearly £80 per horse, and Belgium the lowest, or about £40. French purchases averaged about £75, and American £56.

PASTEURISM IN AUSTRALIA.—The representatives of M. Pasteur in Australia were recently applied to by a number of flock-masters in New South Wales to vaccinate their sheep as a preventive of Anthrax, experiments, carried out in the colony having proved successful. M. Pasteur was cabled to for his permission, and his reply was to the effect that his representatives could vaccinate 100,000 or 200,000 sheep after they had finished the experiments with rabbits agreed upon by the Colonial Government, which they are at present engaged in carrying out.

THE PREVENTION OF RABIES BY PASTEURIAN INOCULATION.—The inoculations performed last year at the Odessa Bacteriological Station against bites from rabid animals show results no less satisfactory than those of the preceding year. The number of persons inoculated was 454; of these, 398 were bitten by rabid dogs, thirty-eight by cats, seven by wolves, three by a man suffering from Hydrophobia, one by a rabid cow, and another by a wild boar. Six persons underwent inoculation simply as a preventive measure. The patients actually bitten by rabid animals may be divided into three classes. First are the dangerously wounded—that is, persons bitten on the head, face, or arms; of these there were eighty-nine. Of the second class—the slightly wounded—there were 206; and in the third category, of those who had received bites through their clothing, there were 158. In only forty-four out of the total 454 cases treated was the actual presence of rabies in the animals inflicting the bites not conclusively proved. Two patients died after the inoculatory course prescribed, but both these cases belonged to the dangerously wounded class, one of these patients being dreadfully lacerated about the head by a rabid wolf. Altogether six patients died during and after the inoculations. Of seven persons bitten by the same rabid wolf, one succumbed. Of forty-four persons bitten by other rabid animals, five died, giving a percentage of 1.1; of these, four were dangerous cases. In the 158 who were bitten through the clothes there was no fatal case.

HYDROPHOBIA FROM THE BITE OF A CAT.—Rabies has been prevalent for some time in Ireland, and quite recently a little girl died in the Royal Hospital, Belfast, from the bite of a cat, inflicted six weeks previously.

BERLIN VETERINARY UNIVERSITY.—Professor Dr. Schütz has been appointed Rector of this University from January 2nd of this year to the same date in 1892.

FRENCH VETERINARY SCHOOLS.—The law of December 29, 1888, fixes in the following manner the sums to be disbursed by the Minister of Agriculture with regard to veterinary instruction and the suppression of epizootics.

Personnel of the Veterinary Schools	..	..	..	£17,312
Material of the Veterinary Schools	..	..	..	22,620
Epizootic Service	..	..	..	6,312
Compensation for slaughtered animals	..	..	..	15,000

INOCULATION FOR ANTHRAX.—The Italian Minister of Agriculture, having been impressed with the good results obtained from Pasteur's system of protective inoculation for Anthrax, recently tried in the Province of Sassari, has granted the sum of 300 lire to the Turin Veterinary School, in order to continue the inoculations where and when necessary.

VETERINARY HONOURS.—Dr. Wehenkel, director of the Brussels Veterinary School, has been elected Vice-President of the Belgium Academy of Medicine. Dr. Bollinger, director of the Munich Veterinary School, has received the title of Superior Medical Councillor of the German Empire. Professor Dieckerhoff, Berlin Veterinary School, has had conferred upon him the title of Doctor of Medicine, *honoris causâ*, by the Medical Faculty of Greifswald University.

SUDATION IN THE DOG.—At a recent meeting of the Central Veterinary Society of Paris, M. Barbey reported the case of a small, very nervous Havanna dog which, as the result of violent fear, perspired very abundantly for about half an hour.

PROTECTIVE INOCULATION AGAINST HYDROPHOBIA.—During last September 121 persons were treated for Rabies at the Pasteur Institute, Paris. Of this number 16 were bitten by animals in which the existence of Rabies was experimentally proved, 75 were bitten by animals in which the affection was proved by veterinary examination, 30 were bitten by animals which were supposed to be attacked by Rabies. In the following case the patient, a man of sixty-five, succumbed after the treatment. He was bitten by a dog on September 12th above the right eyebrow; a piece of the skin, measuring 1 centimètre by 4 centimètres, was torn off. Two other bites were inflicted on the forehead, a scratch on the left forearm, and one on the right leg. The patient was treated from September 12th to October 3rd. On October 6th he complained of pain in the cicatrix on the eyebrow, and headache. On the 8th there was formication, especially in the right portion of the skin of the cranium and face. The patient could not sleep, and complained of pains in the limbs. On the 10th slight Hydrophobia and Aërophobia appeared, and increased in intensity until the 11th. The patient was greatly excited. He expired on October 11th at the Hôpital Broussais. The rabic symptoms appeared three days after the treatment was suspended. Inoculations were made with the medulla oblongata of the dog which had inflicted the bites these inoculations, introduced into the eye, determined Rabies in twelve animals.

Correspondence.

HYBRID BETWEEN THE OX AND BISON.

SIR,—Will you please permit me to draw attention to two errors in the publication of my article about the hybrid between American bison and domestic cattle, which appeared in your journal for this month?

1. The extract which I gave from *Forest and Stream* has been inserted in "Notes and News," under the head of "Buffalo Breeding," without stating its source.

2. My own observations upon the subject, on page 98, have been furnished by the printer with quotation marks, as if they were the extract itself.

In *Forest and Stream* of December 20th, 1888, there is an article headed "Buffalo Domestication," from which the following statements are particularly worth the attention of agriculturists:—

"Viewed from the commercial standpoint there seems little doubt as to the success of this experiment. No fur has yet been found which offers such protection against cold as the buffalo robe, and the robe of the cross-bred stock is better than that of the pure-bred buffalo. It seems altogether probable that by judicious inter-breeding, a new race, larger, stronger, and far heavier than anything now known, will be produced. In the half-bred stock the hump almost disappears, as will be seen in the illustration. The hardiness is undoubted, the beef is seemingly equal to the best from domestic stock, and the milk fair in quantity, and very rich. The fact that the cross-bred stock are fertile among themselves, and with the parent stock on either side, is by far the most important point connected with these experiments.

* * * The buffalo cow is seldom or never impregnated by the domestic bull, while the domestic cow breeds readily to the male buffalo. For many years a popular impression has existed that the domestic cow cannot give birth to a calf by a buffalo bull, on account of the hump or the great size of the shoulders. As a matter of fact, the buffalo calf has, at birth, no hump at all. The half-bred calf is a large animal, and small domestic cows may have difficulty in parturition, but with large loose-hipped cows there is no difficulty."

Any one wishing to experiment in breeding the hybrids should procure the *Forest and Stream* numbers for November 29th and December the 20th. In the latter are illustrations taken from photographs of the domesticated bison and the cross-breds. There can be no doubt that such animals would be of great value for draught purposes.

J. J. MEYRICK.

Dublin, 20th February, 1889.

CARDIAC CLOTS.

SIR,—In looking over your valuable periodical for January last my attention was called to the very interesting subject of "Tumours in the Ventricles of the Heart."

On carefully reading the communication, I was rather surprised to find that the description of the so-called tumours showed them to be nothing more than blood-clots. These, of course, may be found in many *post-mortem* examinations. The cause of this appearance of the clot is the whipping up of the products that go to form the fibrine, by the last fluttering beats of the heart; and the colour, together with the consistency, indicate that the clot is partially formed before death; the black portion of the clot is formed after death.

Could the writer have supposed that tumours so large as described would have existed in so important an organ as the heart, and the animals live for a sufficient length of time to produce the peculiar symptoms of that case? or how could such symptoms, *e.g.*, temperature 105° , be produced by any tumour formation in the heart? The fact of the horse being sick, as indicated by the high temperature, and dying slowly, would tend to produce the clots in the heart which might give rise to Dyspnœa, and the symptoms, tossing of the head, etc.

I hope you will pardon me for attempting to correct that which I thought might possibly tend to mislead students.

Ontario Veterinary College, *Feb. 9th.*

H. H. JENKINS.

HIPPACEA.

SIR,—I apologise for having again to trouble you on the above subject. I should have treated Mr. Bowden's reply to my letter with silent contempt, had he not challenged me to prove a statement I made in your Journal for December.

Allow me again to state most emphatically that Mr. H. Warrior, Northallerton, is the chemist who has "Hippacea" and other nostrums prepared by "Henry's Great Indian Remedy Company" in stock, on sale or return.

Mr. Bowden accuses me of taking the opportunity to insert a gratuitous advertisement. In answer to such an absurd, childish remark, I am happy to inform him that advertising with me has long ceased to be necessary. Not so with Hippacea; it will need all the "managing director's" "tactics" to make it "go," even with the bait he so temptingly offers at the end of his letter.

No doubt he is endeavouring by giving it away to fulfil Mr. Pallin's wish that a tin may be found in every veterinary pharmacy.

Northallerton, *February 15th, 1889.*

JOHN NETTELTON.

A CORRECTION.

SIR,—Would you kindly give me space in your next number to correct a statement which appears in the paper on "Machine-made Horse-shoes and Nails," etc., read by me at the last meeting of the Veterinary Medical Association of Ireland, and which I see appears in the report of the meeting in the February VETERINARY JOURNAL? The sentence I allude to reads as follows: "But when it is known that a set of ordinary-sized shoes costs considerably under a shilling, the saving of expense can be better understood." It would have been more correct to have said that the cost of the shoes varies from a shilling a set, any increase on that price depending on the size and pattern of the shoes required.

B. L. GLOVER, A.V.D.

ARE WE FAIRLY REPRESENTED IN COUNCIL?

DEAR SIR,—The answer to the above question by the profession generally would be, No; it is one-sided. A few of our representatives no doubt study the interests of the hard-worked practitioner, but when we find about one-fourth of the Council composed of professors, together with eight or nine examiners, it looks too much like a clique. One thing, however, is certain, that increased College fees, with the present lax system of examination, will be of no benefit to the practitioner, but only those in connection with the teaching institutions.

Not many years ago, before the examinations were rearranged, it was not an uncommon thing for a veterinary surgeon to get a hundred guineas premium with an out-door pupil, but now practitioners have either to dispense their own medicines or take a pupil without a premium. We don't want men in Council who make a special study as to which is the easiest way to pass a student through the College. I am afraid there are too many practitioners in this country already. Neither do we want to recognise anything in the form of a veterinary college abroad, without strict investigation as to the class of men it turns out, or in any way retard our progress and lower us in the eyes of the public.

Some fresh blood infused into the Council-chamber would be beneficial;

we want men to represent us who know the wants of a hard-worked profession, who can form a conscientious opinion, and hold their own without fear or favour.

J. C.

NOSTRUMS.

DEAR SIR,—With reference to the offer made by the managing director of the Great Indian Remedy Company, it is to be hoped that no veterinary surgeon will accept it. Should any one, however, feel curious as to the peculiar admixture and accept a free sample, I should recommend them to try its lubricating properties on some cart wheels, and not apply it to the skin of any living animal. But for whatever use it may be put to, no veterinary surgeon who has the welfare of the profession or that of his brother practitioners at heart will think of giving a stimulus to the sale of another of the already too numerous quack remedies. Another matter, which has not probably come under the notice of some veterinary surgeons, is the indiscriminate way in which wholesale druggists issue their price-lists and formulæ. It is not an uncommon thing to find a stud-groom or horse-keeper in possession of one. I will give an instance of how I was deprived of a client. My services were requested to attend a valuable brougham horse which was suffering from superpurgation, the result of its having had two physic-balls given, one not having the desired effect. The groom informed me that the balls, together with some mixtures and applications, were obtained from a firm of wholesale druggists. He also gave me to understand that his mistress had given him instructions not to order any more stock medicines from me, as she could obtain them very much cheaper at the veterinary stores. Should the other remedies correspond in quality with the physic-balls, and the groom be allowed to use his own judgment, it will no doubt be another glaring instance of penny wise and pound foolish.

VERITAS.

THE NATIONAL VETERINARY ASSOCIATION.

SIR,—The communication from the pen of the Honorary General Secretary of the above Association, which appears in the *VETERINARY JOURNAL* for February, is so over-full of flagrant misrepresentation that, though very unwilling to trouble you at all with reference thereto, I am advised by several professional brethren that I ought not to allow the matter to pass unheeded, which most certainly it was my intention to have done. I shall not refer to more than four or five points of the Honorary General Secretary's long-winded communication, which will be quite sufficient to exemplify to what depths of degradation this gentleman descends in order that he may try to show what an exemplary officer he has been and still is ; for be it known by all whom it may concern, that this gentleman considers himself so essential to the bare existence of this Association, that he stated to another member of the profession that rather than it should exist without him as the Honorary General Secretary, "he would smash the whole thing up." Perhaps Mr. Banham will deny having made such a statement, but fortunately the same can be confirmed and established.

In the first place, let me state that Mr. Banham, with characteristic effrontery, intruded himself upon this correspondence as though he, and he alone, were the person who could reply to my inquiry in the *Veterinary Record* of October 27th last ; and instead of furnishing the information I asked for, when he did address a letter to the *Record* of November 3rd he merely sought to gratify his vanity by arrogating to himself the right to question me thereupon, and in a presumptuous and dictatorial tone—as any one who desires can see for themselves—patronisingly offered to

answer me, provided I would bow down and worship him. At the time I wondered what it all meant; I now can understand, as it is evident Mr. Banham was drawing upon his own imagination with regard to my receiving information from Mr. James Simpson.

This brings me to the next important point. Mr. Banham gives it as his opinion "that Mr. James Simpson not only gave the information he publishes in the *Veterinary Record* of December 8th, but also every particle of information which Mr. Hurndall has published in reference to this matter, and as a matter of fact, no other source of information was open to him." Now, sir, I may state for your information that Mr. James Simpson and I had no communication of any sort or description, either verbal or written, on this subject until November, and therefore the correspondence in the *Record* proves that Mr. Banham's assumptions were and are entirely erroneous. I am not going to satisfy Mr. Banham's curiosity in the matter. Mr. Simpson has already informed him in a courteous manner how much I am indebted to him for what I know of Mr. Banham's official shortcomings; but neither on this nor on any other point will I hold communication with Mr. Banham until he retracts the charge of untruthfulness he brought against me in the columns of the *Record*. If gentlemen cannot conduct a public discussion without hurling epithets of this sort at one another, it is time to discontinue writing in the public press. Such delinquencies as this call for and would receive an ample apology from any one possessed of a well-balanced mind, but this I do not look for from one of such a querulous turn of mind as the Hon. Gen. Sec. of the N.V.A.

To show how regardless of exactitude Mr. Banham is, I must remind you that he states "Mr. Hurndall asks, in the *Veterinary Record* of October 27th, how it happened that he was not elected on the Provisional Committee." I defy Mr. Banham to find that I asked any such question; for the question neither exists on paper nor did it ever enter my mind!

But I learned from Mr. Simpson on Nov. 13th that I was among the thirty elected at the meeting of the 14th September last, and also that of the six whose names were afterwards unconstitutionally and illegally erased, I was the only one who was a member of the N.V.A. Now, why had not Mr. Banham the candour and straightforwardness to tell your readers and yourself that fact? No! he apes at a "generous explanation," but his generosity did not extend so far. Why? Because it would have been an acknowledgment of his own official deficiency; he would in this have owned to a mistake, which would have demanded a far larger amount of moral courage than he is possessed of. I am told, and I believe it, that if the meeting which elected the Provisional Committee was a constitutional one, then I am still a member of that committee; for no one, not even Mr. Banham, I conclude, would venture to affirm that the system of erasing names adopted on this occasion was a valid proceeding, and such as would hold water. I, however, neither desire nor intend to investigate the position further; it is quite enough for me to learn that my name was erased; I care not what means were adopted to ensure it.

The main object of my primary inquiry is now fully attained. I suspected irregularity in the conduct of the business arrangements of the N.V.A., and I asked for information through the columns of the *Record*. That information has come to me from several sources: such as I received from Mr. Simpson the readers of the *Record* can also enjoy, and I conclude that all who take the trouble to read will arrive at the same opinion that I have, viz., that my suspicions were not without good foundation, and it now remains for members of the Association to consider whether they are satisfied.

J. SUTCLIFFE HURNDALL.

Blackheath, Feb., 1889.

DEAR SIR,—Your readers will, I feel sure, rather commend than blame me if I treat Mr. Banham's vulgar personal abuse with the contempt it deserves. I have no intention of following his example. If Mr. Banham would avoid resorting to abuse when he finds himself beaten in an argument, and at the same time avoid the dangerous practice of making statements in which there is absolutely *no* truth, one might not object to correspond with him. I have no intention of traversing all the misleading statements made by Mr. Banham.

My case is this: "That the rules of the National Veterinary Association have not been observed, and that the privileges of the Association have been abused."

As to the non-observance of the rules, I adhere to my statement, and I am indebted to Mr. Banham for proving this part of my case to my entire satisfaction. Firstly, we have his statement that "no rule has been *infringed*;" then in another part of his letter appears this self-convicting admission: "He is not aware that any rule has ever been violated to any considerable extent." Now, to the mind of any business man this is too shocking; surely a rule is either observed or it is disregarded!

Mr. Banham's admission, however, renders it unnecessary that I should refer in detail to the particular rules which have been violated.

Now, as to the "abuses of the privileges of the Association:" I have before me the official circular of the National Veterinary Association, issued by Mr. Banham (the Hon. General Secretary), concerning the Newcastle meeting, and on it I find—1. Details of the business to be dealt with. 2. A personal appeal to the members for their photographs. 3. This following very extraordinary appeal:—

"If they (the members of the Association) consider their General Secretary worthy of a seat on the Council (of the Royal College of Veterinary Surgeons) he will thank them if they will accede a favour to him by voting for him."

Now, sir, *nine* of the candidates for Council honours last year were members of the National Veterinary Association, of which Mr. Banham is secretary. He thought it no "abuse of his official position" to voluntarily thrust his name before the profession as early as January, 1888, on the official circular of the Association.

Again, is it not "abuse of the privileges" for an Hon. Secretary to send leaflets with the official papers of an association, when a vacancy occurs in his farrier's shop? The members of the National Veterinary Association will remember perfectly well the leaflet to which I refer, to the effect that "Mr. Banham is in want of a farrier at twenty-five shillings per week, and would be obliged," etc.

The National Association was never intended to be a servants' registry medium, and no ordinary member of the Association would think of using it as such.

Mr. Banham says if all these irregularities take place, "it is somewhat remarkable that he has never heard of them." Why, sir, the improper use made of the official circulars of the Association was the subject of common talk, and was brought to Mr. Banham's notice, to my knowledge; added to which, he can hardly have forgotten that the system was condemned in open meeting at Newcastle, in the presence of Mr. Banham, by a gentleman from Scotland. Members, however, will observe that no mention is made of this little fact in the official report of the Association. I am sure Mr. Banham is heartily sincere in his wish "that the members of the profession will take no notice of Mr. Simpson's fault-finding;" but as the bulk of the members of the profession are "observers of law and order," his appeal is a hopeless one.

Again, his effort to create an unfriendly feeling between the twenty-three gentlemen on the Provisional Committee and myself has proved abortive; nearly all are my personal friends. I voted for the election of each and all, and with nearly all I have had the pleasure of acting for years past.

Now for the destruction of Mr. Banham's imaginary "trump card." On the assumption that I gave Mr. Hurndall certain information before October 27th, Mr. Banham feels himself justified in accusing me of every kind of dishonourable conduct. The following is *the fact*, documentary evidence of which I possess.

Neither directly nor indirectly did Mr. Hurndall receive from me one word of information upon this subject until after three or four letters (between Messrs. Banham and Hurndall) had appeared in the *Veterinary Record*. I repeat that I watched in vain for some generous explanation to Mr. Hurndall; none was vouchsafed. I then gave Mr. Hurndall all the information he was entitled to receive as an elected member of the Provisional Committee. By doing this I supplied an omission of the Hon. Secretary's.

Mr. Banham has only this week received a very wholesome correction at the Eastern Counties Association meeting, which he will do well to lay to heart. He suggests that I am fond of litigation. I can only say that this is about as true as Mr. Banham's other statements, but if he will continue to write and speak of me as he has done he will have ample opportunity given him of forming a correct judgment upon this question.

I thank you for affording me so much space, and assure your readers that it is not my intention to write again upon this subject, whatever Mr. Banham may decide to do.

JAS. F. SIMPSON.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from F. Raymond, A.V.D., Woolwich; Dr. F. Boschetti, Turin; Fitzpatrick Eassie, London; J. A. Nunn, A.V.D., Bombay; R. W. Burke, A.V.D., Jubbulpore; Messrs. Arnold and Sons, London; J. Ferguson, Glasgow; "Veritas;" "J. C.;" T. Flintoff, A.V.D., Dublin; B. L. Glover, A.V.D., Dublin; H. Gray, Stratford; J. Moore, Manchester; A. Leather, Liverpool; J. Nettleton, Northallerton; A. Hill, London; J. Sutcliffe Hundall, Blackheath; J. F. Simpson, Maidenhead; W. S. Adams, A.V.D., Oosoor; F. Smith, A.V.D., Aldershot; W. F. Greenhalgh, Leeds; W. A. Clifford, Staplecross, Sussex; R. Rutherford, Edinburgh; H. H. Jenkins, Ontario; S. Villar, Harrow; J. J. Meyrick, A.V.D., Dublin; Lt.-General Sir F. Fitzwygram, Havant.

BOOKS AND PAMPHLETS: *Drs. Boschetti and Bassi*, Fleming's *Trattato di Ostetrica Veterinaria*; *Dr. Long*, *Die Trichine*; *Capt. M. H. Hayes*, *Illustrated Horse-breaking*; *O. Bosio*, *Trattato di Farmacologia Veterinaria o Materia Medica*; *Bulletin et Mémoires de la Société Centrale de Méd. Vétérinaire*; *E. Lavalard*, *Le Cheval dans les Rapports avec l'Economie Rurale*, etc.; *Bulletin des Séances de la Société Nationale d'Agriculture*.

JOURNALS, ETC.: *Oesterreichische Zeitschrift für Wissenschaftliche Veterinärkunde*; *Der Hufschmied*; *Journal of Dosimetric Therapeutics*; *Shooting Times*; *Revue Vétérinaire*; *Lancet*; *Recueil de Méd. Vétérinaire*; *British Medical Journal*; *American Live Stock Journal*; *Edinburgh Medical Journal*; *Annales de Méd. Vétérinaire*; *Medical Press and Circular*; *La Clinica Veterinaria*; *Wochenschrift für Theirheilkunde und Viehzucht*; *Live Stock Journal*; *Mark Lane Express*; *London Medical Record*; *Bell's Weekly Messenger*; *Journal of Dosimetric Medicine*; *Procès-Verbal de la Academie Royale de Médecine de Belgique*.

NEWSPAPERS: *Scotsman*; *Sheldrake's Military Gazette*; *Irish Times*; *York Herald*; *Leeds Mercury*; *East Anglian Daily Times*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

APRIL, 1889.

HEREDITARY TRANSMISSIONS.

BY T. B. GOODALL, M.R.C.V.S., CHRISTCHURCH.

TAKING a retrospective survey of the history of the veterinary profession for the last few years, we may, I think, adduce as one reason for its rise in the estimation of, and the increasing recognition of its usefulness by, the educated public, to its having struck boldly at the *cause* rather than treating the *effects* of disease in each crisis in which it has been called upon to advise and act.

To what extent the profession has been responsible for the mitigation of the many diseases of the eyes, air passages, and other organs, by the advice it has given regarding the construction, light, ventilation, and drainage of stables, etc., can never be fully demonstrated.

So with the whole category of the contagious diseases of our domestic animals, and the part the veterinary profession has taken in aiding to frame the laws for their eradication.

Our advice and guidance is now sought by the public on a point of as great importance to the community as any one of those that have engrossed the attention of the profession in the past. We are asked to define what shall constitute hereditary unsoundness in horses.

We ought, I imagine, to feel regret that our Council were so hasty in framing their reply. To an outsider, it would appear as though they were alarmed by an imaginary sphinx, but really it was not a question of urgency involving the life of those to whom it was addressed.

However that may be, the fact now stands that after deliberation and consultation with the whole of the profession, our Council have submitted to the Societies by whom they were solicited a list of ailments that they considered likely to be transmitted from parent to offspring. Each item of this list, if accepted, would for the future compel the veterinary advisers in show-yards to point

out such to the stewards and judges as a legitimate cause for disqualification.

I most respectfully submit that it is impossible for any man, or for any number of men, to make a list of diseases and abnormalities, and insist that these must, under all circumstances, be transmitted from sire or dam to their progeny ; and yet this is what we, as a profession, are committing ourselves to do, and when we pronounce and seriously advise these Societies to look upon every individual Side-bone, Ring-bone, Wind-gall, Curb, Spavin, Thoroughpin, etc., etc., etc., as a disqualification for stud purposes, are we not in danger of overstepping the bounds of sound practical common sense, and tending to bring the profession into disrepute ? Shall we not be inflicting an injustice on a class of men who are doing good service to the community, and shall we not be hindering, rather than furthering, the objects of those who are striving so hard to see our old England ever foremost in her breeds of horses ?

The Council is reported to have ruled that these resolutions are not intended to direct veterinary surgeons in practice, *i.e.*, to advise a client that he may breed from a certain animal is permissible ; but if the adviser is officially connected with the show, he must reject the same animal, which is absurd.

In dealing with the question at issue, are we keeping up the traditions of the profession ? Are we not rather striking more at the *effects* than the *cause* of a system ?

The point which has been apparently overlooked in the deliberations of the various bodies of the profession is, that the primary cause of any one of the list of ailments (certainly all the diseases of bone enumerated by our Council as legitimate reasons for disqualification) may have been induced by the unnatural and irrational system of breeding from immature parents.

I have carefully perused the papers that have been read, and the discussions on those papers, before Veterinary Medical Associations, and I have noticed but one allusion to this subject, and that in a casual way, by Mr. Rutherford, when he spoke of having traced the cause of the appearance of certain diseases of the bones and joints of horses in Australia to their having been bred from immature parents.

Is it not customary in this country to breed from horses at three, aye, at two years old even ? and do not we, who are conversant with a few of the mysteries and marvels of the development of the organisms of our domestic animals, know that at these ages the horse is quite immature ? As I write this, I have before me the heads and other bones of two and three-year-old horses, and I notice them soft, spongy, friable, *immature*, showing in every part a lack of development as compared with the bones of older horses,

and I ask myself, is it reasonable to expect *equally mature* hard stock from the parents from whose bodies the imperfectly developed bones were taken, as from thoroughly matured parents?

I carry my reasoning further, and argue that if animals with their bones (and therefore other tissues of the body also) but imperfectly developed, are allowed, in man's wisdom of artificial selection, to become the progenitors of their kind, should we not expect the stock so begotten to be prone to diseases of tissues induced by bringing those tissues into exertion, or exposing them to concussion? More especially should we expect a disposition to diseases of the bones and joints of the limbs of the horse from such a cause, since he is essentially a beast of burden or draught.

Let me give a possible illustration of the deleteriousness of this system in inducing disease or unsoundness in our horses. We know that it has happened that a horse begotten by a two-year-old sire has developed into a "champion" at shows. I do not consider this weakens my argument, because though such an animal may be good-looking enough to satisfy the most fastidious, his tissues may still lack tonicity, *and he, being bred, fed, and kept for show only*, may never have had the test of work. As a prize-winner, he is used extensively for breeding purposes, and his stock, when worked, develop various unsoundnesses. Could not the reason be traced, in such instances, to their immature grand-sire?

Mr. Hunting, in the opening remarks of his most excellent paper, reminds us that every organism, even the most complex, originates in a cell; that the *life*, the mysterious *force* that rules and governs the whole future of that organism, is implanted into it at the moment of its inception, and this *life* has all the peculiarities and eccentricities of the parents. That it must be received at this moment is patent from the fact that in the case of horses the offspring rarely sees its sire, and rarely do the sire and dam meet again. And yet the offspring has certain peculiarities from each!

This, then, seems a reason why sire and dam should themselves be mature (and this necessity is recognised in our own case by the marriage laws of the realm), or the life-organism they originate must suffer from its very beginning from the drawbacks of their immaturity, *i.e.*, if the embryonic germ of the future horse is not, at its inception, endowed with all the elements of perfect maturity, because its parents were not endued with the power of transmitting those elements, therefore every tissue of which that cell is the founder and builder must always lack those elements.

If we gain certain advantages by violating nature's laws in our system of artificial selection, we can only expect equivalent drawbacks, for "Nature will always avenge herself."

After all, our boasted wisdom is but a fraction of the great mystery around, and when we open our eyes to notice its fearful majesty, how beautifully and rhythmically it works, what care there is taken that only the matured and the tried shall propagate their kind ; is it not here, from the book of Nature, we should look for our lesson and guidance ?

Watch a grand old stag, or a wild stallion, how he beats off all young intruders from the sanctity of his harem, and how jealously he vindicates the least approach to familiarity ! During the breeding seasons there are terrific battles between the stags or horses, as the case may be, but the mature ones always succeed in driving off the young or feeble ones. May we not deduce the lesson of the "survival of the fittest" ?

If we, as a profession, would be true to the traditions of the past, and if it be our desire to discover the primal cause of many unsoundnesses, let us first satisfy ourselves whether this unripe fertilisation is not the initial evil which predisposes the embryo to any of the others. If it be so (and there is fair reason for such an assumption), then I take it, if we advised strongly at all times against such practice, we should be grappling with the *cause* rather than dallying with *effects*.

Now let us glance at the list of what we may be called upon in the future to designate "transmissible unsoundnesses." Independently of my argument as to the age of the parents, I most respectfully submit that any one of them may, under certain circumstances, be accidental, and therefore not transmissible ; and as this is the delicate point to decide, the veterinary adviser at a show should not only be a thoroughly competent veterinary surgeon, but also a thorough horseman.

It would take too long to enumerate each of the diseases *seriatim* ; but taking one case for illustration, we will suppose that the veterinary surgeon is asked to decide as to the merits for stud purposes between two mares, one a really good-shaped animal, and well proved as to capabilities in the hunting-field, but with a curb, in such a case probably the result of an accident ; while the other is, technically speaking, perfectly sound, for never having been put to the test of work, her legs and joints may be quite free from blemish, yet this animal may not be nearly so well-shaped as the former one. Would any practical horseman hesitate for a moment as to which he would prefer for the stud ? And yet *at a show* the veterinary surgeon, under the new regulations, must step in and condemn the good and tried animal, and pass the medium one !

Let us remember that we shall not be asked to adjudicate as to whether the animal before us is sound or unsound ; but is it

affected with any ailment that it will transmit to its progeny? In such a case it is only the combined testimony of the veterinary surgeon and horseman which can be satisfactory.

In the exhibition of horses, even in such a noble sight as that lately seen at the Agricultural Hall, never to be forgotten by those who witnessed it, is there not a danger that the system of showing horses *as a business* tends to their being bred, fed, and fattened for show, and show only; thus exaggerating the importance of certain points, and ignoring the still more important qualities of endurance and stamina, which can be tested only in absolute practice.

Might we not advise the Societies to encourage the showing of animals of proved capabilities and adaptability for the special work for which their stock will be required? such as jumping-prizes for hunters, or even, as in the *old* steeplechases, a prize for endurance, and a prize for staunchness in the collar for some of those beautiful sleek cart-horses?

Might not some such resolution as the following be submitted, viz.:—"With the object of preventing the so frequent recurrence of unsoundness in our best breeds of horses, we advise the Societies interested to encourage the breeding from mature parents, and, when practicable, to give the preference to animals of proved capability for endurance or work over those that have not had this test."

I do not anticipate that these views are likely to be received favourably by the public *at once*; but if this theory is a sound one, and if, in the course of time, it can be shown that its adoption is followed by beneficent results, then the public may be induced to carry it into practice.

My only reason for recording my thoughts in such a long paper is that the profession may be led to consider the subject in the aspect in which I have endeavoured to bring it before them. Whether the ideas here mooted are found practical, or if they are discarded as useless, I shall have the satisfaction of knowing that I have performed a duty that I felt to be incumbent on me.

A STUDY IN CANINE PATHOLOGY.

BY W. S. ADAMS, V.S. (1ST CLASS), A.V.D., REMOUNT DEPOT, OOSSOOR,
MADRAS.

THE following is the history of an outbreak of disease amongst my dogs, from which the whole, four in number, died. The dogs were—

(1) "Waler," a well-bred imported Australian Kangaroo dog, five years old.

(2) "Witch," a cross-bred (Polygar and Australian), nine years old.

(3) "Whistle," }
(4) "Rattle," } young dogs, the offspring of the above.

At the end of May, 1888, I went on three months' leave, leaving the dogs in good health. On my return, at the end of August, I found each dog sick and weakly, especially Whistle and Waler. At first I did not think that they were suffering from any disease of a special nature, but thought that the different life they had led during my absence had probably had an injurious effect on their health. This opinion was partially confirmed by the steady improvement in Waler on simple tonic treatment, careful feeding, and exercise.

Witch and Whistle continued to fall away; first Whistle died, and then Witch. Rattle lived for another month, when he died, and a month later Waler died, after a sudden relapse. During the time that Rattle was sick I felt convinced that all my dogs were suffering from the same disease, which was of a special nature.

I determined, as far as was possible at this time, to try and find out the pathology and origin of the disease. I will first give the symptoms, which, generally speaking, were similar in each case.

1. *Loss of flesh* was very gradual at first, but progressive unhealthiness of the coat and dulness were the first symptoms of ill-health. After a time, when the appetite became affected, the wasting became more rapid.

2. *Appetite*.—At first unimpaired, but subsequently it became capricious, though it did not entirely fail till towards the end. This was especially the case with regard to Rattle, who ate his feed till the day before his death.

3. *Bowels*.—The state of the bowels during the illness was the same in each case. At the time of the dog showing the first symptom of ill-health the bowels were constipated, sometimes obstinately so; subsequently they became irregular, Diarrhœa set in, and latterly Dysenteric evacuations were passed, accompanied by severe pain and straining.

4. *Thirst*.—From the first the sick dogs were very thirsty, and towards the end this thirst became intense.

5. *Fever*.—The surface of the skin was very hot and dry, but the internal temperature did not rise till about the time the Diarrhœa set in, when the fever was very high, and the thermometer registered 104° to 105° .

6. *Cough*.—In each case, before death, there was a deep and painful cough.

7. *Vomition*.—With neither Whistle nor Witch was any vomiting, but with Rattle and Waler, especially the latter, it was very distressing.

8. *State of the Skin*.—This was almost the first indication of ill-health. The coat became unhealthy in appearance, and the skin infiltrated. Subsequently, there was a loss of hair, especially about the limbs and feet, which became œdematous and very tender.

Later, sores broke out on various parts of the body, especially about the limbs and head. The skin itself was hot, a large amount of dandruff was formed, and there was a peculiar smell arising from the skin of the sick dog.

Micro-organisms.—I examined, microscopically, the discharge from a sore on the elbow of the dog Rattle, and also the blood taken from a puncture on the inside of the thigh. In both I found innumerable micro-organisms. Whilst Waler was sick I frequently examined the blood, and invariably found micro-organisms present, and after death I found them in the blood taken from each organ, but they were more numerous in blood taken superficially from the integument, and in an atom of blood from a small puncture made behind the elbow I found micro-organisms swarming.

Pathology.—I am of decided opinion that the disease is of a specific nature, and as far as I am aware is one which has hitherto not been described as a disease to which the dog is liable. The micro-organisms I am unable to recognise, but from the facts stated hereafter I consider that they are pathogenic.

Before entering into further details I will note the conditions under which the dogs were prior to the attack.

Feed.—The dogs were regularly fed, the feed consisting chiefly of boiled rice and scraps of mutton boiled to shreds. They were housed at night, and were provided with cots to lie on, and were regularly groomed.

Exercise.—Whilst I was at home, although the dogs did not get regular work, they were only tied up at night and were given an occasional run.

Cause.—From the above I do not think we can look for the cause of the disease either to want of sanitation or injudicious feeding. Although doubtless want of exercise and unaccustomed confinement would affect their general health and render them predisposed to disease, this could not alone produce the special disease from which my dogs died. I am, therefore, led to inquire into the probable source of infection, and I think this is not far to seek. When I left, a dog was brought on to the premises, which was sick, and I can now see he appeared to be in the last stage of a disease similar in character to that from which my dogs died. This dog died in a very short time. He was very emaciated, his skin was in the same state which I have described above, and before death he had Diarrhœa and Dysenteric symptoms. Another dog was also sick, and very emaciated and almost hairless; this dog did well and partially recovered, but subsequently he had a relapse and died in a very short time.

Treatment.—At first I treated each dog with alteratives and

tonics, treating special symptoms as they occurred, regulating the diet, etc. To Waler I gave taraxacum, with, for a time, excellent effect; I am, however, convinced that none of this treatment had any curative effect, but only served to prolong life. After I concluded that my dogs were suffering from a disease of a special form, due to the presence of micro-organisms in the blood, it was late to commence experimental treatment. I, however, gave Rattle carbolic acid and oil of turpentine, but without any beneficial effect. At that time Waler appeared to be improving under the taraxacum, till his final relapse, which was really a collapse, and gave no time for any special treatment.

I will now follow two cases throughout.

1. *Waler*.—On my return I found this dog sick nigh unto death, very emaciated and weak. The skin was in a curious state of disease; great irritation; portions of the body were nearly hairless, especially the limbs, the front of the chest, and about the ears. The feet were swollen and tender, and the dog was hardly able to walk. He had been treated, and had improved under cod-liver oil. The dog was thoroughly domesticated, and he improved when I brought him to the house. The appetite was small. I put him on a course of muriate of iron, and gave him a diet of sheep's head and rice, occasionally giving him meal. The bowels were irregular, and occasionally blood was passed. I treated the skin with an ointment of which boracic acid was the active agent. The improvement was very gradual, and it was some time before the dog could walk a mile. I now gave taraxacum, which seemed to have an excellent effect; the dog gained in strength and spirits, and he lost the disease of the skin, but I could still see that he was not the dog he was, and it was remarkable how "aged" he was by the sickness. At a time when the dog might have been said to be convalescent came the fatal relapse.

On November 25th he took his morning exercise with me; on his return he seemed to be quite done up and refused a portion of his feed. In the evening he was feverish, and evidently a sick dog.

Nov. 26th.—The following symptoms were shown: high fever, 104°, painful evacuations of blood-coloured fæces, attended with violent straining. The dog was in a curious state of nervous excitement, bounding about, shaking the head violently; he was constantly snuffling, as if to clear the nostrils. I gave him some bread-and-milk, which he instantly rejected; and any attempt to swallow was attended by violent and painful retching; during the whole day he could keep nothing down. I gave him a sedative of Tr. Opii and Spts. Chlor. with brandy, which I repeated later on, and at 3 a.m., as there was a return of the nervous symptoms and retch-

ing, I was called and gave him another sedative drench, a full dose, which relieved him.

Nov. 27th.—The fever is lower, 103° , and there has been no return of the Dysenteric symptoms, but the vomiting and retching continue, and these are accompanied with violent paroxysms. I repeated the sedative, but that was immediately rejected, and violent convulsions followed drenching. I still thought, if this vomiting could be overcome, that there was hope, as the fever was less and the purging had ceased. I now injected, hypodermically, ten minims of solution of morphia, after which there was no retching for some hours, and at about 6 p.m. I was able to drench him with some sheep's head jelly with a teaspoonful of whisky, which he retained, and now remained quiet for some hours; however, this proved to be but temporary relief, for at about 9 p.m. all the worst symptoms returned, and the poor brute died, sixty hours from the first symptom of relapse.

With regard to the presence of micro-organisms, I examined the blood on several occasions during convalescence, and invariably demonstrated their presence, but found them in no great numbers till I examined the blood taken at the time I gave the first subcutaneous injection; they were then present in myriads.

Post-mortem examination, made about twelve hours after death, showed the rigor mortis was remarkable, and there was a very noteworthy dry and bloodless condition of the tissues. In order to examine the thorax I removed one of the fore-limbs, and in cutting through the large vessels I found them loaded with black blood, and the axillary artery was plugged by a fibrous clot. On opening the thorax I found a considerable amount of effusion; the lungs were congested, but showed no sign of acute disease. The stomach was inflamed and ulcerated in patches, as was also the lining membrane of the intestines. The intestines contained no ingesta, but a small quantity of yellow mucus. Neither the liver nor spleen showed any sign of mortal disease, although the liver was large and was congested. The spleen was of natural size. The kidneys were healthy. I examined, microscopically, blood taken from the lungs, spleen, liver, and brain, and detected micro-organisms in each, but it is remarkable that in neither instance were they present in anything like the numbers in which I had found them in blood taken superficially from the skin. The heart was large, and there was considerable effusion into the pericardial sac.

(2) "Rattle."—On my return I found that this dog had been sick, but had improved, and was not now considered a sick dog, but still he was poor in condition and had no life in him. The appetite was fair, the coat was unhealthy, and there was a loss of hair very similar to that which I have described in the case of

“Waler.” For some time this dog showed no special or urgent symptoms, but although he fed fairly well, he continued to lose condition, and the skin became more unhealthy, and latterly became œdematous; small sores broke out about the limbs and head, discharging a thin sero-sanguinolent matter. This case rapidly terminated fatally. Diarrhœa set in, which became Dysenteric; the dog fed till within twelve hours of his death, when vomiting set in, but there were no brain symptoms in this case, and the dog died quietly. It was in this case that I at first observed the micro-organisms, in blood taken from the elbow.

Experimental Inoculation.—Having demonstrated the presence of micro-organisms in the blood, and being in doubt as to their significance, I obtained a pariah pup and inoculated him with blood taken from the dog “Rattle,” with the following result:—

The inoculation was carefully made, by simply inserting a lancet charged with blood beneath the skin on the inside of the thigh. There was a rise in the temperature on the fourth day after inoculation, on the seventh, and again on the eleventh, twelfth, thirteenth, and fourteenth, after which there was a fall till the seventeenth day, then a slight rise till the twenty-first day, and finally a great rise on the twenty-third day, then a sudden drop of no less than 6° prior to death, which took place on the twenty-sixth day after inoculation. I repeatedly examined blood taken superficially from the skin, and found micro-organisms; on the twentieth day, just before the last rise in the temperature, they were present in myriads. I also found them in the blood taken from the jugular vein after death, but not in the numbers I had seen them in the blood taken from the skin during life.

At first the pup was well, and really improved in condition; this was doubtless due to the regular and clean food he now received, and I do not suppose he ever had a real meal given him before. When the temperature at first rose there were no other symptoms of ill-health, but subsequently there was an unhealthy look about the pup, and he partially refused feed. After the last rise in the temperature there was a sudden collapse; he lay down, and was unable to rise, and seemed in pain, crying out when touched, and he continually snapped in a delirious manner.

Post-mortem examination, made immediately after death, showed the tissues to be in the same dried up state as described above; there was considerable effusion into both the thorax and abdomen; no disease of either lungs, liver, or spleen; the intestines were empty, and showed no signs of specific disease.

Remarks.—I have throughout spoken of “micro-organisms,” and I have done this advisedly, till I am able to determine their true nature. I am, however, convinced that these organisms are

pathogenic. The disease is shown to be inoculable with blood containing these germs; it is also contagious. There was an absence of disease of the liver or lungs, which is noteworthy, as in cases of prolonged sickness in dogs, in this country, I have found, *post-mortem*, the liver usually to be extremely diseased, and often disease of the lungs to be the immediate cause of death. In all cases the mucous membrane of the intestines was affected; in two, and also the inoculated pup, brain symptoms were a marked feature. There are many symptoms in this disease which will in a great measure be found to resemble those of “Surra,” investigated by Dr. Griffith Evans and V.S. J. H. Steel. (I forwarded my notes to these officers, and have to thank them for their kindly assistance.) The character of the micro-organisms, however, precludes this disease from being classified with “Surra,” neither is it “Anthrax.” If we are driven to the comprehensive term “Distemper,” I fear it would be rather to hide the lack of knowledge of its true nature. I would define the disease as an inoculable and contagious disease of the dog, affecting animals of all ages, the urgent symptoms of which are progressive, and marked by extreme emaciation and debility, Diarrhœa and Dysenteric symptoms, and in some cases acute nervous symptoms and delirium, remarkable for its excessive mortality, the blood containing micro-organisms, which are probably the cause of the disease.

In recording these observations, I must explain that the investigation is very incomplete, for two chief reasons: first, that I did not earlier recognise that I had an obscure specific disease to deal with; and secondly, that all my dogs having died, a stop was put to further investigation. I trust, however, that these notes may prove a basis for further inquiry.

P.S.—Since writing the above, it has struck me that we may find a probable source of infection in the village pariah. Many a sickly, starved, mangey animal do we see about, and my dogs have been responsible for the death of many a one. I will endeavour to follow this idea up.

“BLACK LEG” IN CATTLE ABOVE TWO YEARS OF AGE.

BY JOHN BRETT, M.R.C.V.S., MANSFIELD WOODHOUSE, NOTTS.

MR. GRAY is quite correct in his assertion that stock owners believe “Black Leg” never attacks animals over two years old, although the contrary is pretty well known to members of the profession who have seen much of the disease. Some districts are quite free from it. I was in Kent in 1886, when Mr. Cooper, of Dover, a very able and careful man, with a long experience, assured me he never met

with a case ; if my memory serves me aright, he said he had never met with one in his practice.

During the years Mr. Gray mentions, a number of deaths occurred in Notts amongst aged animals ; one dairy farmer lost several cows, all above five years old. The district to which he refers has never been free from the disease, to my knowledge, for the last twenty-five years ; on some farms the annual losses have been most serious. A practitioner never hears of a tithe of the fatalities, as the cattle are frequently found dead. No further notice is taken, except to remove the skin and leave the carcase lying about in the stack yard or some other place equally accessible to dogs or other animals. A brook is often a favourite place of disposal ; the manure tank is frequently used as the general farm mortuary. The idea is that everything is dissolved by the liquid, and the manure thereby improved ; undoubtedly its fertilising properties are increased, but what about the micro-organisms ?

On one of the largest and best managed stock farms, in other respects, in Notts, this system was carried out for years, and the liquid distributed over the grass land as occasion offered. What were the results ? Black Leg and Abortion amongst cattle was the bane of the farm. The latter occurred at almost regular intervals as far back as I can remember, and is probably going on to some extent at the present time ; upwards of a score aborted every year, either in the spring or autumn. Every cause was assigned but the right one. Black Leg would have decimated the herd had not a rigid system of preventive treatment been adopted. Every now and then those efforts would be relaxed from oversight or carelessness, with what results ? Deaths were sure to occur. Numerous experiments were made from time to time, and a plan was hit upon at last which, when conscientiously carried out, gave the most gratifying results. Had the pathology of the disease been better understood, more care would have been taken with the disposal of the carcasses after death. Unfortunately, farmers will not recognise its contagious character, and still look upon it as a dietetic disease, although repeated experiments have shown to the contrary, and the knowledge thus gained disseminated far and wide.

FIRING BY PYRO-PUNCTURE.

BY GEORGE T. PICKERING, M.R.C.V.S., YORK.

I WAS glad to see in the VETERINARY JOURNAL for March some remarks on the above subject by Mr. T. Flintoff, A.V.D.

I have obtained in many cases treated by pyro-puncture during the last few years, some very good results.

Some time ago I was requested to see a hunter, the property of

a gentleman. He had ridden him out one morning to hounds, and the ground being too hard, there was no hunting. When coming home with a friend or two, they had a race on the grass for about half a mile; the consequence was that the horse, being hardly up to the rider's weight, broke down on both hind legs, severely spraining and rupturing both suspensory ligaments, the near hind being the worst. The horse was so lame that he could scarcely travel. When he reached home he went down in the box, and could not stand for a day or two. When I saw him he was suffering great pain; the near hind fetlock was nearly on a level with the heel, and the off one had given way a good deal (both suspensory ligaments were ruptured). After hot fomentations, rest, and high-heeled shoes, etc., and the inflammation had subsided, I fired them by pyro-puncture, and blistered them well; and after re-blistering them two or three times, the horse got perfectly sound and worked well.

For splints, I think there is nothing better. I have a horse now that I have been working for some time. When I got him he had a large splint the size of the top of a hen's egg on the near fore leg, about two inches below the knee. The man I got him from used to ride him in a boot. I fired and blistered the part well, one deep puncture into the splint, and applied Hydrarg. Biniod. (1 to 6). The splint has almost entirely disappeared. I can hunt, hack, or drive him without the slightest fear of his touching the part with the opposite foot, which he used to do frequently. He is an aged horse, and I suppose the splint had been there some time.

I could mention numbers of cases in which splints have entirely disappeared under this treatment.

For curbs, I know of no better treatment—and I have tried a good many—than the high-heeled shoe, and after fomentations, etc., to reduce the inflammation, and when this has entirely disappeared, pyro-puncture and blister. I generally make one or two pretty deep punctures over the curb, and apply Hydrarg. Biniod. (1 to 6) well rubbed into the puncture, and rub a little blister (Hydrarg. Biniod. and Cantharid. of each one part to excipient 16 parts) round the parts. I can speak highly of this method of firing in side-bones, spavins, severe sprains, ringbones, chronic foot lameness, contracted feet, etc.

Where I fire one horse by the bar-firing, I fire six by pyro-puncture.

We all know that we are seldom called in to treat splints, curbs, etc., until the various blisters, liniments, and the different patent applications have had a good trial.

Not that I recommend firing for every case, but as a last resource, when other means have been tried and failed, I think there is

nothing better than firing by pyro-puncture, and applying a good absorbent.

The following are its advantages over bar-firing :—

1. It does not blemish.
2. Is more effectual, and more easily done.
3. No sloughing of the skin, and it acts only on the part required.
4. Deep structures are more easily reached.
5. Effects of absorbent more marked.

I think in private practice we should get more cases to fire, as the farmers and dealers would have more horses fired but for the marks left by the bar-firing.

Having given it a good trial for some time with such satisfactory results in almost every case, has led to my making these few remarks in this valuable journal, practically demonstrating the value of the treatment suggested by Mr. Flintoff, A.V.D.

THE GENERAL SANITATION OF STABLE BUILDINGS.

BY FITZPATRICK EASSIE, M.R.C.V.S., LONDON.

I WAS invited, a week or two ago, to contribute an article on the above subject to a sanitary periodical, and the idea subsequently occurred to me that an extended review of the same subject might not be out of place in the columns of the VETERINARY JOURNAL. The necessity of hygienic surroundings for the maintenance of ordinary health, and the retrogression in development dependent upon contrary conditions, have, during the last couple of decades, become almost a by-word in progressive medicine. In the breadth of medical and veterinary literature the necessity for the application of sanitary principles is constantly insisted upon. The comparative paucity, however, of written matter dealing with the technical side of the question as applied to the stable is my apology for venturing to submit to the notice of the profession these paragraphs, however indifferently they may be strung together.

Damp.—The first question that naturally presents itself to one's mind, with regard to the general sanitation of stable buildings, is the adoption of precautions against *damp*; and it is a matter which must be attended to at the very foundation of a building. To get an adequate idea of the importance of this subject one has only to start with the legitimate hypothesis that one of the commoner bricks is capable in itself of absorbing upwards of half a pint of water, and then to erect, as it were, a mythical edifice to contain, say, 22,500 of these bricks. Now, provided that such a

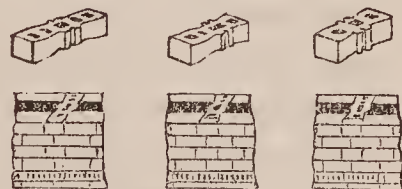
building were sufficiently low-lying—and by capillary action water will thus attain in a wall to a height of thirty feet—our building might readily contain 2,800 gallons of water, or fourteen tons by weight. It is unnecessary to suggest to the professional mind the army of coughs and colds and rheumatic affections that such an amount of moisture would probably give rise to, nor to point out the potency of such a constant adverse influence as predisposing to diseased conditions in general.

Dampness of walls is likewise traceable to the action of *driving wet*, but not to the extent of the other derivative. *Rising wet* is intercepted by the interposition of impervious materials, the building of hollow walls, and the erection of *damp courses* and *dry areas*. Asphalte plays an important part in all these ideas, but all kinds of patents are existent for coating the external surface of foundation-walls, which claim for their object the arrest of damp. Slates built against the wall and cemented with asphalte are very effectual, but properly built damp courses are naturally the best.

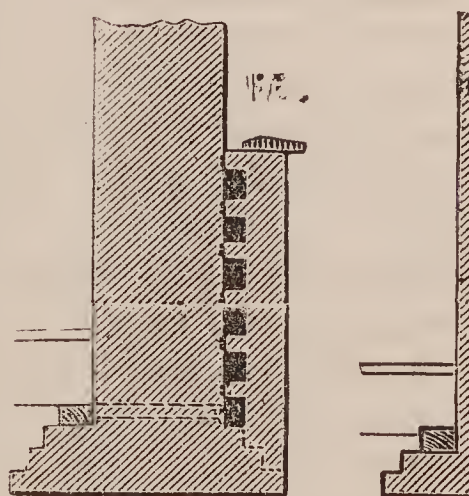
Bricks of a better quality are less porous, and therefore a better protection against *driving water*; but a stable which is much exposed should possess a double wall, joined by perforated *bonding bricks*.

Drainage.—It is now generally conceded that surface drainage is quite adequate for stable purposes; but, for the sake of argument, we may with advantage establish a working hypothesis whereon to prove the lack of necessity for the elaborations of an underground system, were it only for the sake of comparison. The object of drainage in the stable is plainly the removal of urine and surface water *alone*, because the solid material is never under any circumstances admitted to the drain. The solid fæces are, on the contrary, removed by surface means—that is to say, by the aid of the broom and basket—to a suitable dung-pit.

It is convenient for our argument to consider, firstly, the selection of a suitable paving material, as upon this depends, in a great measure, the success of the system we would advocate. A good stable flooring, to commence with, must afford a good *foot-hold*. It must be durable and impervious to moisture, otherwise the subsoil will soon become a reservoir of decomposing fluid. It should, further, possess the quality of being readily cleansed; and lastly, it ought



HOLLOW WALLS AND BONDING BRICKS.



DAMP COURSE.

not to be too costly. The paving which is perhaps most commonly in use is made up of blue Staffordshire clinkers, and the main feature of this pavement is that its surface is marked throughout by parallel V-shaped channels, which cross each other at right angles. These markings constitute the only drawback to this form of stable flooring, and that because they cannot be swept in two directions at once. For this reason the paving is uncleanly. Macadam, cobbles, and wood are obviously inappropriate; whilst slabs of stone or granite, besides being slippery, are certain to tilt. The small yellow bricks, laid "herring-bone" fashion, make a very good flooring indeed, and are thoroughly to be relied on, but *Williamson's cement* is the ideal stable pavement, and wherever it has been laid down it has given the utmost satisfaction.* It can be used alike for surface and underground drainage, but its chief recommendation is that by its use can be avoided not only the fitting of underground pipes, but the fixing of surface channels of iron or *terra cotta*, because of itself it is capable of being impressed into channels, and sloped and moulded at will. When the cement is being laid a central broad channel is depressed in the passage of the stable, which inclines until it delivers over a gulley in the yard. Into this broad groove a system of feather-planned channels incline from each stall or box, with the result, of course, that all surface water gravitates to the lowest point. For surface drainage, if cement were not employed, metal conduits would be necessary, and these, when they are used, should be open and preferably of wrought iron. The great virtue of surface drainage is its open character, as opposed to the hidden workings of an underground drain, which, like its vital prototype the intestine, is subject to many disorders, and equally difficult of remedial treatment. On the other hand, however, a selection is not always a matter of preference, and it may very well happen that it would be less expensive to make some necessary alterations in an existing underground drain than to abolish it and resort to the surface method. The general idea of this paper is less to deal with the perfections of an ideal stable than to suggest the remedies proper to a defective one, so that notwithstanding the fact that we regard the above system as that which is the simplest, cheapest, and most cleanly method extant, we will proceed to deal with the several materials which collectively form an underground drain; and we are not without a hope that at the termination of our brief survey we may have successfully inoculated admirers of drain-pipes and syphons with a belief in the simpler method.

* Wilkinson's concrete has not proved so satisfactory in troop stables as Wilkes', the latter having iron slag for its base, the former crushed granite.
—ED. V. J.

The remotest ancestor of the modern glazed earthenware drain-pipe was a wooden contrivance—to wit, the lumen of a hollow tree. As far back as the time of Xerxes, earthen cylinders were in use as drain-pipes. The ancients, however, notwithstanding their general progress, were not particularly strong on sanitary matters, and, in fact, it was left to our immediate generation to adopt the principle of the syphon as a “trap,” which has since become of such importance.

The first essential in drainage is that the drain should be perfectly water-tight, and to ensure this many improvements have been made with regard to the joints; but in order to further guard against the possibility of leakage, it is now customary to cement the joints and lay the whole drain in concrete. This latter provision further serves as a solid, impervious foundation for whatever kind of pavement is subsequently used.

With regard to fall, three inches in ten feet is the minimum incline at which a stable drain should be laid.

A trap is a *syphon* containing water, and its function is to arrest, by the aid of this water seal, the passage of gases in a given direction. Traps are inserted at the terminations of the drain, in the stalls, and under all gratings, for the purpose of intercepting drain air from the stable. A trap is likewise inserted in the drain before it reaches the sewer, to cut off in a similar manner gases generated there. This particular trap is further modified to perform a function to which we will subsequently refer. The atmosphere of the stable is thus twice trapped from the sewer, and once from the drain. Were it not for this provision, the very gas burnt in the stable would be dependent in part for its combustion upon oxygen derived from the sewer.

The traps located in stalls are variously described as “horse pots” and “mare pots,” according to their position, and in a many-stalled stable this arrangement is generally alternative.

(To be continued.)

HORSE-SICKNESS AT MASSOWAH, NORTHERN AFRICA.

BY G. CONTI, V.S., ITALIAN ARMY.

THIS disease was observed amongst the horses of the Italian Army of occupation at Massowah, the symptoms being the following: Great debility, and from the commencement loss of appetite; dry skin and injected mucous membranes, the conjunctiva irritable and covered with petechia, very much swollen and tumefied, so much so that it almost covers up the whole eye. The tongue gradually becomes swollen and dry, assuming a blue colour, with desquamation and

deep ulcers, if the case lasts long enough. The same lesions are visible on the buccal membrane, which exudes a quantity of serum tinged with blood. The lips, head, lower part of the neck, thorax, and limbs become swollen with an œdematous infiltration. Respiration is difficult and distressing, the nostrils being widely dilated. As the disease advances the animal becomes in a highly nervous state, with a dry, painful cough, and a profuse white discharge from the nostrils, which sometimes assumes a green or yellow colour. Cerebral symptoms, with vertigo or coma, are sometimes observable. The usual duration is from one to fifteen days, but it is most irregular in its course—what, to all appearances, is only a slight case assuming a most severe character in a very short space of time. Cases that recover remain convalescent for a long period. The cause of the disease is unknown, but the drinking-water is supposed to play an important part in its production. The mortality is much greater amongst horses than mules.*

The question that arises is, Is not this the same as the Horse-sickness of South Africa, the relative position of the two places north and south of the equator being much the same? In the report on Horse-sickness in South Africa I published in the *VETERINARY JOURNAL* some time ago, I pointed out that in Equatorial Africa there appeared to be an unhealthy zone where equines could not live, and that this decreased to the south. I also pointed out that Natal appeared to be on the border-land of the unhealthy equatorial regions and the healthy and cooler climate of the Cape Colony. May not the same condition of things exist to the north of the line as the south? Conti's description closely resembles the "Dikkop," and continued or bilious form of South African Horse-sickness in many particulars.

JOSHUA A. NUNN, F.R.G.S., F.R.C.V.S.,
Army Veterinary Department.

A PRESERVED (AND MODIFIED?) VIRUS OF BOVINE PLEURO-PNEUMONIA.

BY J. CAMMACK, M.R.C.V.S., KIMBERLEY, SOUTH AFRICA.

ON 22nd September, 1888, an old cow, worn out by and dying from Pleuro-pneumonia, was shot, and the carcass was thoroughly drained of blood. Cotton wool (non-sterilised), saturated with the fluids from lungs and chest, was dried in the sun and wind; more than six weeks later calves were inoculated with the dried wool. They "took," and did well.

This virus-holding wool was kept, in the interval, in a hot, dry atmosphere, "on the top of the clock," in a farmer's sitting-room.

* *Recueil de Médecine Vétérinaire*, Nov. 15th, 1888.

Editorial.

IS THE FLESH OF TORTURED ANIMALS POISONOUS AS FOOD?

THE idea has been recently started, or rather revived—for it is somewhat ancient—that the flesh of tortured animals may be pernicious as food; and as it has received the support of medical men, it is possible that it may engender alarm in the minds of nervous people who are easily roused to a sense of danger with regard to matters connected with food, drink, and air. It is notorious that creatures whose flesh is consumed by man, often undergo torture or great distress through fear, before they are killed; indeed, some of them, as deer, are purposely hunted and excited immediately before death, in order to endow their flesh with that gamey flavour so much esteemed by *gourmets*. Whether it really does so, is a question we cannot pretend to answer; but the popular notion that it does would fortify the presumption referred to, that some change does occur in the tissues under the influence of pain or distress. A medical man at Lancaster lends his countenance to the poisonous character of what he designates “tortured meat,” and he evidently thoroughly believes that there is danger in its consumption. A toxic product is developed in the flesh of tortured animals, he asserts, one of the class of peculiar bodies known as “ptomaines,” some of which are not destroyed at the temperature of cooking, and which, he contends, are undoubtedly produced under conditions of great pain and distress. Before such a statement can be accepted, stronger and clearer evidence must be adduced than has hitherto been brought forward. He can only give one instance from his own experience, to support his contention. It is that of a gentleman who is always made alarmingly ill if he eats trapped rabbit; three times he suffered so severely as to endanger his life before he discovered the cause, and yet he can eat shot rabbits without any disturbance at all. The doctor judiciously adds, that no doubt many people can and do eat of trapped rabbit without any apparent ill consequence, but he concludes that the danger still remains that some day or other, when they are unusually susceptible to the action of the poison, or owing to the poison being strong and concentrated, they will have a serious attack. Many cases of dangerous illness and death of unknown origin, he avers, may be explained in this and similar ways, and he entertains no doubt that some have been really caused by it.

Needless alarm in this direction is to be reprobated; there is already sufficient to occupy attention. The majority of animals suffer more or less torture before they yield up their lives for the sustenance of the lords of creation. The proof that this torture will render their flesh hurtful has yet to be furnished, and one or two instances of people offering symptoms of illness after partaking of a particular kind of meat, is no evidence that it possesses noxious properties. In fact, the idiosyncrasies of individuals in the

matter of food are extraordinary, and a curious chapter might be written on the peculiarities or susceptibilities of people. To these exceptions, rather than to the formation of ptomaines in the tissues or fluids of terrified animals, we would be more inclined to ascribe such effects as have been recorded. Wild, and even domesticated carnivorous creatures eat the flesh of tortured animals with impunity. What an amount of torture does a mouse undergo before it is devoured by the cat; and yet no one has committed himself to the statement, so far as we know, that cats have suffered from illness or have died, owing to the action of ptomaines developed in the bodies of their victims, immediately before these had succumbed to a protracted agony.

THE AFRICAN "HORSE-SICKNESS."

IN previous numbers of this Journal, allusion has been made to the above subject in connection with the reports upon it by Mr. Nunn, two of which have been published in its pages. These reports have now been issued as a Blue-book of the War Office, with the addition of plates, maps, and plans. They are prefaced by the following remarks from the Principal Veterinary Surgeon of the Army, addressed to the Adjutant-General, General Viscount Wolseley, K.P., G.C.B., and may prove interesting to our readers as a summary of our knowledge of this destructive malady.

MY LORD,—I have the honour to submit, for the information of His Royal Highness, the Commander-in-Chief, the Right Honourable the Secretary of State for War, and the Right Honourable the Secretary of State for the Colonies, three reports from First Class Veterinary Surgeon J. A. Nunn, F.R.C.V.S., Army Veterinary Department, on the destructive disease that appears among horses in certain parts of the African Continent, and which, in South Africa, is known to the English Colonists as the "Horse-sickness," to the Boers as the "Paard-ziekte."

In consequence of the diversity of opinion with regard to the nature of the disease, the great mortality it occasions, its terribly rapid course, and the impotency of all attempts hitherto made to cure it, my attention has been directed to it for some time.

In recent years it has been particularly destructive among animals employed during military operations in the Colony of Natal, and the official reports of the fatality attending its appearance, as well as the mystery which seemed to surround its development and progress, impelled me to request that a skilled Officer of the Army Veterinary Department should be sent to Natal to study the malady, in order to clear away the doubts that had always prevailed as to its origin and nature. And as an opinion had for a long time been entertained that it was Anthrax, I was hopeful that, if it proved to be so, Pasteur's method of protecting animals against that virulent disease, by inoculation with cultivated virus, might be made available in preserving those of the Army, as well as those belonging to the Colonists, from a pestilence which is not only serious from a military point of view, but constitutes a positive drawback to colonisation: sometimes sweeping off, as it does, nearly all the horses and mules over wide districts during the season when it prevails. A preventive measure of this kind, it was considered, would prove an immense boon to South Africa.

The importance of such an inquiry as was contemplated, when it was suggested that a well-skilled and specially-trained Veterinary Officer should

undertake it, could scarcely be overrated if these considerations are taken into account; and its importance was also manifest when the history of the disease—chronological, geographical, and medical—was reviewed. I may be permitted to refer briefly to this, before further alluding to the reports now submitted.

Dr. Scherzer, in his narrative of the voyage of the Austrian frigate, "*Novara*," gives a very concise account of the malady, from which I transcribe the following passages in support of my statement. He writes:—

"During our residence in the Cape Colony (1857), severe depression existed among the agricultural inhabitants of the western and eastern districts, in consequence of an epidemic which, within two years, had carried off 64,850 horses (draught horses, mares, and foals) of the value of £525,000 sterling. Many landowners, in consequence, entirely gave up rearing horses, and turned their attention almost exclusively to the breeding of sheep. The visitations of this malady are by no means of late introduction, but hitherto they have made their appearance at such long intervals, that but little attention has been paid to them, and people regarded their return without much alarm. This disease of the horse, usually endemic (enzöotic) in Cape Colony, assumed, every twenty years owing to some inexplicable causes, an epidemic (epizöotic) character, and, on those occasions, extended over an extensive area, as happened with extraordinary regularity in the years 1780, 1801, 1819, 1839, and 1854. Hitherto, no further precaution was taken than, as soon as the disease appeared, to drive the horses from the grass pastures to their stables or covered sheds, and there supply them with fodder, the night dew being considered a main cause of the complaint.

"A resident in Stellenbosch, indeed, maintained, that the dew which was deposited during the continuance of the disease, tasted quite bitter, and was of an unusual brownish tinge. Singular to say, not the slightest symptoms of illness manifested themselves in the swine, dogs, and birds of prey which devoured the carcasses of horses that died of the disease. Considering the importance of the subject to a land-holding colony, it could hardly fail that numerous individuals should devote themselves to elucidating the causes of the devastating epidemic; but it must ever remain a striking and significant fact, illustrative of the high standard of cultivation in Cape Colony, that within a few years, 112 different authors published treatises respecting the complaint among the horses. The result of these numerous researches was, that the malady is epidemic (epizöotic), but not contagious; that horses driven into the stable before sun-set, and not permitted to go out to pasture, are, as a rule, exempted from attack; that those horses which are kept at night in open grounds, or in places where there are heaps of dung, take the disease in a milder form than if suffered to roam at large day and night; lastly, that horses for which no covered shelter can be provided, may, with great advantage, be sent to hilly localities and dry runs of land.

"The practical remedy which was most resorted to, consisted in immediate and prolonged bleeding, pushed to actual exhaustion of the animal, in the first stage of the disease."

From all accounts, the disease only attacks solipeds—horses, asses, and mules; and during severe outbreaks, zebras and quaggas have been found dead in their native haunts, with the characteristic masses of foam protruding from their nostrils. Ruminant animals appear to be altogether exempt from visitations; so that while horses and mules are dying on every side, cattle, sheep, and goats, as well as camels, graze in the same localities at the same time, with absolute impunity, so far as this malady is concerned. Carnivorous animals eat the flesh of horses which have died from the disease, and suffer no ill effects, and it cannot be produced by inoculation with any of the products derived from diseased solipeds.

The influence of locality in its production is very marked. It prevails chiefly in low-lying districts or "vleys," and is rare indeed in elevated localities. Season, too, has a remarkable influence in its development, summer being the time of year in which it manifests itself, and with the onset of winter it disappears. From the earliest times in the history of European colonisation in South Africa, it has proved a scourge to the settlers, and these peculiar features in its character—prevalence during summer, and sudden disappearance as soon as cold weather sets in, with its tendency to confine its ravages to low-lying regions—were well known to the primitive colonists at the Cape of Good Hope, who turned this knowledge to good account.

This is testified to by Burchell, the early South African traveller, who visited the Cape Colony in 1811. When at Roggeveld Mountains, near the then border of the Colony, he writes: "The Hantenberg, lying in the direction of N.N.W. from the Roggeveld Mountains, is said to be very high land, and is remarkable for being one of the few situations in this part of the country where horses are not liable to the Horse-sickness which rages during the summer season, and annually carries off great numbers." When speaking of the seasons at Klaarwater, he further remarks: "After the middle of October no frost is expected for seven months, but in the mornings of May it is always found to return, and is the signal for the return of their (the Boers') horses from the Roggeveld, whither they are sent in January, to avoid the Paard-ziekte, a fatal distemper to which they are liable in the hotter months. Those who object to send their horses to so great a distance from the settlement, are content to run the risk of keeping them in the Langberg, an elevated mountainous country, lying in a N.N.W. direction. This, however, not being so cold as the Roggeveld, is less safely to be depended on. It does not seem that the distemper acquires its full force until the beginning of February, but after then the lower districts of the whole of the extra tropical part of Southern Africa are, as far as my information enables me to speak, subject to its baneful effects. Experience has shown that the first frost, whenever it happens, fortunately puts a stop to its further ravages." And, again, at the same place in January, 1812, he remarks: "As the season for the Paard-ziekte was expected to begin, generally about the commencement of February, a party of people set out this day for the colony, taking with them a great number of horses, with which they were to remain till the first of May, at a farm in the Roggeveld, belonging to a Boer named Franz Moritz. Many of these people had this year sent more than half their horses into the colony; the other half, in order to be nearer at hand in case of hostilities with any of the neighbouring tribes, were sent off at the same time for the Langberg, under the care of a stronger party. In a former year, when they preferred running the risk of keeping their horses at the village in the Asbestos Mountains, out of eighty horses there died of this distemper not fewer than seventy. . . . They (the Langberg Mountains) appear to be very lofty, and it was said that on the other side there is little descent, the country continuing at the same high level, which fact, as the air must be colder there than in the lower plains about Klaarwater, has induced the Hottentots to keep their horses there during the season of the Paard-ziekte. There is also another elevated tract between Langberg and the Kloof, where horses also are kept, and which is therefore named Paardberg (Horse Mountain)."

Anderssen, in his book of travels (Lake Ngami), states in 1856:—"We had only been a short time at Richterfeldt (South-West Africa) when three of our mules and the remaining horse were seized with a mortal disease, and in the course of a few hours they all died. Though the loss of the animals was great to us, their death was a god-send to the poor Damaras, who devoured the carcasses bodily, and without any disagreeable result. The distemper in

question is usually known by the vague name of Paard-ziekte; and as the cause is totally unknown, no remedy has yet been found efficient to stop it. Throughout Great Namaqua Land it is particularly fatal. Some people attribute this singular disease to poisonous herbs of which the animals have inadvertently partaken, and others, again, to the eating of the young grass; but all the suppositions are highly improbable for reasons which it would be unnecessary to enter into here. Fatal as the disease is to horses, yet happily there are places (even in districts where it commits the greatest ravages) that are always exempt from it. And as these localities are well known to the natives, if one's horses be sent to them prior to the commencement of the sickly season—usually the months of November and December—the animals invariably escape the malady. The attack of our animals was an unusual exception to this rule, for they fell victims to the disease fully a month prior to the rainy season. From the Orange River, on the south, and as far north as Europeans have penetrated from the Cape side, this deadly disease is known to prevail, and is one of the greatest drawbacks to successful travelling in South Africa. . . . Within Zwartboor's territory (Namaqua Land) was a mountain where horses might pasture throughout the year without being exposed to the Paard-ziekte, the cruel distemper to which these animals are subject. Almost all the Northern Namaquas, Jonker among the rest, are in the habit of sending their horses here during the sickly season."

It is probable that the disease has a wide geographical range in Africa, and that it will be found more or less prevalent towards the centre, and even towards the north; for Sir William Baker, in his work on the Albert N'yanza, describes it, or a closely allied disease, as killing his horses and mules during his progress to the source of the Nile. Livingstone refers to it in his travels in the interior; and the pestilence which destroyed so many of our horses and mules at Annesley Bay, during the expedition to Abyssinia in 1868, was, according to report, identical with this Horse-sickness. The Italian expedition to the same country, during the past year, has suffered severely from it at Massowah.

But it does not appear to extend to Eastern or Western Africa, so far as I can learn. It may be noted, however, that in Senegambia, West Africa, the French have lost many horses, especially those from Algeria, from malarial disease. M. Dupuy, Veterinary Surgeon to the Squadron of Senegal Spahis, in the *Recueil de Méd. Vétérinaire* for August, 1888, states that of forty-six Arab horses he saw disembarked at Kayes in 1885, thirty-three had succumbed in about three months. So long ago as 1863, the deadliness of the climate to imported horses was announced by the traveller, M. Mage ("Voyage au Soudan Occidental"), who observed that the generally received opinion in Senegal, that the Arab horse could not live in the "Haute-Fleuve," as the country is sometimes termed, prevented the Governor from placing the horses of the Spahis at his disposal as an escort. The mortality appears to be due to two diseases. One is as rapidly fatal as the Horse-sickness of South Africa, and only attacks the Algerian horses, leaving the small native ponies, and the mules and asses from France, unharmed; it is prevalent every year, exercising its maximum ravages towards the termination of winter, when the inundated regions begin to dry. It affects isolated horses, as well as those living in troops, attacking sometimes the old before the young, and appearing as frequently among those kept in the open air as in sheds. This form has been compared to the pernicious malarial fever of man, and indeed has been so designated in the horse (*Fievre paludéenne pernicieuse*). The other form is more like the intermittent fever of mankind, and though equally fatal, has a slower course than the last. It sometimes attacks indigenous horses, and it is marked by persistent elevation of temperature, with remissions, which are soon followed by paroxysms. After death the liver and spleen are found to

be greatly increased in volume, the blood is watery, and the lower part of the limbs and body is swollen by serous infiltrations. In the first form there are similar changes noted. The liver is excessively enlarged and friable; the spleen is also much larger than natural; the blood is dark, and in contact with the air it does not redden, while it leaves a violet stain on the hands; the lungs are pale throughout and rather resist pressure, the inferior portions having a yellowish tinge and gelatinous consistency, and after section an abundance of yellow foamy fluid can be expressed from them.

These malarial diseases of the horse are special to the "Haute-Fleuve," where the soil is clay, and the whole country more or less marshy during the winter. In Lower Senegal, in the Cayor region especially, where the soil is sandy and arid, and where deep wells have to be dug for water, they are not seen, and Algerian horses thrive well.

The Nomadic Moors who frequent the right bank of the Senegal river, and who devote themselves to rearing cattle and horses, always retire from this malarial region to the interior when the rainy season sets in.

It may be further remarked, that when the surface of the ground is freshly broken in this sickly country, in order to form camps, the fevers among the horses are always more prevalent and severe.

Of late years, the South African Horse-sickness has been brought more immediately and impressively under my notice, in consequence of the heavy losses it occasioned among army horses and mules in Natal, and the embarrassment it occasioned to military operations; and notwithstanding the excellent reports upon it, furnished by officers of the Army Veterinary Department serving in that Colony, and notably those of Inspecting Veterinary Surgeons Gudgin and Lambert, and Veterinary Surgeons Duck and Rutherford—I was not satisfied as to the nature of the disease, nor yet as to the measures necessary to protect animals from it, or to cure them when attacked.

In order to arrive at a correct knowledge of these, and also to test the value of the latest discovery in preventive medicine, with the view of checking the ravages of Horse-sickness in our African possessions, I suggested to His Royal Highness, the Commander-in-Chief, the desirability of sending a competent veterinary officer to make the necessary investigations in Natal. First-class Veterinary Surgeon J. A. Nunn, F.R.C.V.S., was recommended, because of his special fitness for the task, and particularly because of his experience in dealing with destructive horse and cattle diseases in the North-west Provinces of India, where he gained an excellent reputation. On being appointed for this duty, he underwent a special course of training in microbiology at the Cambridge Pathological Laboratory and at the Brown Institution, London, after which he went to Pasteur's laboratory, in Paris. Provided with the necessary apparatus, he at length embarked on December 10th, 1886, furnished with the following instructions:—

"The object of the proposed investigation is to ascertain the nature, causation, and prevention of the fatal disease known as Horse-sickness in South Africa. For this purpose the investigation should be carried out in the following manner, or as near thereto as circumstances will permit:

"1. The investigator should locate himself in a district where the malady is most prevalent and fatal (Pietermaritzburg, in Natal, seems to be most suitable), and during the season when it is general (the South African summer).

"2. As the disease is undoubtedly due to a micro-organism, the source of this should be sought for in the soil, the dew, and the food and water which horses receive. As the malady chiefly attacks horses and mules allowed to graze after sunset and before sunrise, the germ will probably be discovered primarily in the dew or grass, probably in both. To decide whether any

organism so discovered is really the cause of the disease, it must be cultivated in a suitable medium, then introduced into the body of a susceptible animal, either by the stomach as in feeding, or through inoculation, so as to produce the disease in it, at first; then in other susceptible animals, by transference from the one primarily infected.

"3. The mode in which the organism obtains access to the body should be ascertained, if possible; whether through the lungs in respiration, or through the stomach in eating and drinking.

"4. The organs of the body in which it more particularly localises itself.

"5. The symptoms, course, and *post-mortem* appearances of the disease in animals affected with it, either (a) accidentally, or (b) experimentally.

"6. The geographical extent of the disease, and the physical and geological features of the districts in which it prevails enzootically.

"7. The most certain and ready methods of prevention of the disease, with regard to (a) the general management of horses and mules, and (b) protective inoculation.

"8. As it is probable that inoculation must be considered the only sure means of protecting solipeds from the malady, by rendering them proof against it, in regions uninhabitable by horses and mules during the hot season, special attention must be directed to this point, with reference to the safest, most certain, and simplest method of modifying or attenuating the virus of the disease for inoculating purposes; whether by previously passing it through the body of some other species of animal, by cultivating it artificially, by diminishing its virulency by heat, or by any other simple yet effective method.

"The best method of inoculation of the animals to be protected (seat and mode of introduction of the protective fluid) must also be ascertained, so as to ensure the safety, success, and ready application of the measure. The duration of the protection so afforded, whether permanent, or, if only temporary, should, if possible, be ascertained; though this may require one or more years.

"9. If immunity from the disease is afforded by this protective inoculation, then should be considered the manner in which the inoculation decided upon can best be carried out in the regions where the Horse-sickness prevails; and this not only with regard to Government animals, but also those of the Colonists.

"10. The assistance of the officers of the Army Veterinary Department in South Africa will be given, if required, in carrying out this important investigation; instructions to that effect having been forwarded to the Senior Veterinary Surgeon in Natal. A request has also been made to the South African Governments to render assistance if required.

"11. Incidentally and concurrently with the carrying out of this investigation, inquiry might be beneficially instituted with regard to the other contagious diseases affecting the domesticated animals in South Africa; not only those employed for Army purposes, but those also belonging to the Colonists, and more particularly with respect to their prevention by protective inoculation.

"12. A detailed report on the whole should be drawn up and forwarded to the Principal Veterinary Surgeon, to whom interim reports should be made on the progress of the investigations."

Arriving in Natal on January 5th, 1887, Mr. Nunn commenced his investigations in Pietermaritzburg a few days afterwards, a case of disease having occurred there on the 11th of that month; and working until the end of the summer (African), he arrived at certain conclusions, on which he based an interim report. These conclusions, as shown in this report, were to the effect

that the Horse-sickness is not Anthrax, and that the micro-organisms found in the fluids and tissues of the affected horse are very different from those of that disease.

In order to complete his investigations, he was directed to remain in South Africa for another year; and during the winter months, when the disease does not prevail, he proceeded to make an inquiry into the horse supply of the country, in the course of which he travelled more than 8,000 miles in Natal, the Cape Colony, and the Free State. His valuable report on this subject has been already submitted.

In the following Horse-sickness season (1887-88), he resumed his researches into the nature of that malady, and transmitted a final report in June.

It is these two reports in particular which I now beg to lay before you. I may observe that they possess much interest, from a scientific point of view, the results arrived at in the first report being confirmed in the second.

Mr. Nunn, following the directions given, set himself first to prove the nature of Horse-sickness. He has succeeded satisfactorily, I think, in demonstrating that, contrary to the opinion of the majority of observers, the disease is not Anthrax. This I had myself previously doubted, because of the fact that during the most serious outbreaks of Horse-sickness, cattle and sheep could graze with safety on the same pastures with the horses. This is not the case in Europe and other countries—as Russia—in those regions in which Anthrax is so destructive; there the mortality among cattle and sheep is much greater than among horses. Anthrax is nevertheless known in South Africa, and Mr. Nunn in his reports alludes to it, and shows in what respects it differs from the Horse-sickness. The chief distinction appears to be, that whereas the former is readily inoculable, and in other ways transmissible to other creatures, the latter is not. Mr. Nunn discovered a micro-organism or bacillus in the Horse-sickness blood, in the foam issuing from the nostrils, and in other fluids and tissues of the body; this bacillus differs in several morphological particulars from that of Anthrax; any introduction of it in various ways, into healthy animals, was followed by negative results.

I may here observe that Mr. Nunn recently sent to England for examination, blood and other matters from horses which were affected with Horse-sickness. These have been examined by Veterinary Surgeon F. Raymond, F.R.C.V.S., Army Veterinary Department, who reports as follows:—

“In some of the tubes I received there were as many as six and seven different microbes, which is probably due, in a great measure, to the fact that Mr. Nunn worked in the open air.

“From tubes I received, I made plate cultivations on nutrient gelatine, with a view to isolating more particularly bacilli resembling those shown in Mr. Nunn’s blood slides.

“I will here state that I distinguished, in the slide sent me, two kinds of bacilli; one a short thick bacillus, the other longer and more attenuated.

“These two bacilli I succeeded in isolating and making pure cultivations of. No. 1, the short bacillus, grows very rapidly on gelatine, causing it to liquefy; a scum of a wrinkled, light, whitish-brown colour forms upon the surface. In cover-glass cultivates, I noticed that the bacillus was rounded at both ends; it does not form chains, and varies in length from nearly a round shape to about eight times its breadth in length. On potato it grows very rapidly, covering it with a brown wrinkled growth, and giving rise to a somewhat unpleasant smell. This microbe bears a very strong resemblance to the common potato bacillus.

"Bacillus No. 2 is motile. On plate cultivations, seen under a low power, it very much resembles the mode of growth of the Anthrax bacillus; when examined under higher powers, it is seen to form beautiful chains, and in this respect, resembles the *B. figurans*, but it differs in its mode of growth on agar-agar. It liquefies gelatine, but not agar. The spore formation is very interesting, and here again a close resemblance to the Anthrax growth is noticeable.

"From cultivations in gelatine, I have procured some exceedingly long specimens, which curve in different directions.

"Besides these bacilli, I found other germs, which, as I failed to notice them upon Mr. Nunn's slide, I looked upon as contaminations. I mention them, because their presence accounts for the changes of colour which he reports upon his cultivations.

"I found—

- A. Sarcina*=The yellow Sarcina.
- A. Torula*=The pink yeast.
- A. reddish* micrococcus.
- A. umber* ,"
- A. white* ," (putrefactive).

"From material received from Mr. Nunn, I have sections of the liver, lungs, spleen, and kidneys. I found in each organ bacilli in small numbers, but they do not bear any striking similarity to those found in the blood. In the kidney I found some large bacilli. The general impression left on my mind is, that cadaveric changes had set up in the subject from which the specimens were taken."

In relation to this matter of germs, I may remark that, according to the *Giornali di Anatomia, Fisiologia, et Patologia*, for May and June of the present year, one of the Italian Veterinary Officers at Massowah sent to the Veterinary College at Pisa, Italy, some blood and portions of tissues from horses that had died of the malady prevailing amongst the expeditionary horses, and already alluded to. On microscopical examination of a portion of this blood (obtained from a mule fourteen hours after death), bacilli were found which measured from .00285 to .00570 mm. In some of these, clear spaces were seen in the middle, the point at which division would have taken place in the process of generation.

A few years ago, some fluids and tissues from horses ill, dying, or dead from Horse-sickness were sent to me from Natal. These materials were experimented with at the Brown Institution, London, and rabbits inoculated with them died in consequence. The symptoms and *post-mortem* appearances were very striking, and consisted chiefly of evidence of bronchial catarrh and sub-pleural exudation. Bacilli were found in the bronchial effusion, and the blood-vessels of the bronchi were sometimes filled with leucocytes. The pleura, as well as the mucous membrane of the bronchi, was thickened by an inflammatory or hæmorrhagic exudation. Bacilli were only observed at the seat of inflammation; long ones were found in the peritoneal fluid and blood. Sometimes they appeared to be passing through the walls of the vessels, but they did not occlude these as the bacilli of Anthrax do, and though they somewhat resembled the latter, yet they were not so numerous, and were more localised, as well as more slender. Their tenuity they retained when cultivated, otherwise they comported themselves like the Anthrax bacilli; which would go to prove that the disease is not identical with, but only allied to, Anthrax. The two diseases further resemble each other in their prevailing chiefly in damp or malarial regions, during warm or hot weather.

With regard to the exact nature of the disease, in some of its features it

bears a resemblance to Anthrax, and might therefore be classed with a few other animal plagues, which were until lately designated "Anthracid," but which are now differentiated, and more especially through the dissimilarities discovered in the micro-organisms that characterise them. That it also is due to a specific germ there can be little doubt, and that this germ requires two conditions in which to develop its activity—the warmth of summer, and the moisture to be found in low-lying situations—is also evident, as then it becomes active; whereas in cold weather it is in a latent or resting condition, and in dry situations it does not find a suitable home. It might even be said that it demands a third condition to favour its development—rank herbage, or vegetation of a certain kind which facilitates the growth of grass.

The fact which Mr. Nunn relates with regard to the "Karoo bush," appears to support this in a very remarkable manner; the districts in the Cape Colony which were at one time uninhabitable for horses because of this disease, being now perfectly safe for them, through the introduction of sheep, which have eaten up the bush, and so altered the vegetation that the germs of Horse-sickness have disappeared. This is a most important observation, with regard to abolishing the scourge from the localities now haunted by it.

The sanitary measures adopted to prevent the disease appear to have been rather successful during the last season, and for the present it is these preventive measures which must be adopted, whenever possible, in order to keep horses and mules free from it.

In conclusion, I think Mr. Nunn has accomplished his mission to the best of his ability, and deserves very great credit for the manner in which, in a climate not very favourable for such investigations, he has pursued his scientific researches into the nature and causes of South African Horse-sickness.

TETANUS IN ANIMALS.

M. NOCARD, director of the Alfort Veterinary School, recently drew the attention of the Academy of Medicine to certain epizooties of Tetanus in private practice, affecting animals treated by certain veterinarians, whilst animals treated by other veterinarians remained unaffected. On the other hand, the inoculability of traumatic Tetanus cannot be seriously contested. It is sufficient to inoculate pus from a wound to render tetanic the greater number of animals susceptible of contracting the malady (guinea-pigs, rabbits, sheep, asses, horses, etc.). The author here observes that spontaneous Tetanus does not in any way differ from traumatic Tetanus; it is, therefore, probable that both have an identical cause. It is more difficult to interpret the rôle of cold in a large number of cases of Tetanus. It appears to be established that in cases of surgical Tetanus it is the instruments of the surgeon which convey the contagium to the operation wound; hence the clear indication for antiseptics. Since 1882, M. Nocard had performed seventeen complete necropsies of tetanic horses. Besides notable increase of the quantity of cerebro-spinal fluid, he found nothing abnormal. He thought that the tetanic virus is seated, like the rabic virus, in the nervous centres, but he had not been able to find the tetanic contagium either in the nervous centres or in the blood. M. Trasbot, of the same school, an ardent disciple of M. Verneuil, pointed to the fact that all muscular rigidity is not tetanic. Thus, the rigidity of animals overworked or suffering from fatigue—the malady of the deer, as it is called—disappears by rest. A deer, accidentally hunted and falling into the possession of the hunters, was completely immobilised by the stiffness of its limbs. The animal was not killed, and the next day the pseudo-tetanus had disappeared.

THE MAL DE CADEIRAS.

BY M. REBOURGÉON, DIRECTOR OF COMPARATIVE PATHOLOGY, LABORATORY OF BELEM-PARA, BRAZIL.

In the *Recueil de Médecine Vétérinaire* for February, M. Rebougeon describes a disease which appears to be special to the equine species in Brazil, where it is commonly known as "Quebra-bunda." It is characterised by feebleness in the posterior part of the body, and disturbance in the sensibility and motility of that region, its commencement being slow or rapid, and its progress sometimes insidious. Anatomically, the spinal cord appears to be chiefly involved, the attack being localised always in the anterior part of the lumbar enlargement; the circulatory system is also modified. It is enzoötic in certain regions, but it has a tendency to extend and become epizoötic. It is prevalent from 10° South to 20° North latitude, but it is seen chiefly in the equatorial region; its degree of longitude is much more extensive, and its focus appears to be the island of Marajo, comprised between 0° and 2° of latitude; though it is equally known throughout the basin of the Amazon, in the provinces of Parù, Maranhô, Cearù, Goyaz, and Matto-Grasso. It has also been observed in Panama, and farther North, even to Mexico.

The opinion is generally entertained at Marajo that the Mal de Cadeiras first appeared in 1834, after a great slaughter of horses, which took place at that time. A Franco-American Company had obtained from the Brazilian Government the privilege of trading in the hides obtained from the immense number of horses inhabiting the island, and slaughter-houses were established in different districts where the skins were procured. The carcasses of the horses were left exposed to the weather, and underwent putrefaction in crowds, no disinfection whatever being resorted to. Rebougeon does not sanction this opinion as to its origin, but is rather inclined to believe that the disease already existed, though cases were rare; and that when the number of horses had been considerably diminished, it became more noticeable because of its intense character, which allowed it to become rapidly propagated, and particularly because of the more numerous and pressing requirements of the Fazendas, or mail and passenger carriages.

Investigation did not discover anything in telluric or atmospheric influences in connection with it; it appears at all seasons of the year, and indifferently in regions wide apart. The stagnant waters in the midst of the *Campos* were carefully examined, but nothing in the shape of bacilli were found; and the dust on the surface of the marshes dried by the sun, and which adheres to the plants eaten by animals, when scrutinised, yielded the same result. The influence of excessive work, however, as well as of age, was notable. Many instances were recorded, in which, after violent exertion or over-driving, horses were attacked by the disease, but always in the acute form. Horses are more frequently affected than mares, and foals oftener than aged animals.

Though Rebougeon does not lay much stress on the parasitic origin of the malady, he remarks that Professor Lacerda, director of the Laboratory of Comparative Pathology at the Museum, Rio-de-Janeiro, in a communication on Beri-beri, asserts that he found in the blood of people suffering from that disease a microbe, which he describes, and that he also discovered the same micro-organism in the medullary tissue of animals which had died of the epizoötic affection of Marajo—a circumstance which rendered the two maladies identical. Rebougeon's investigations in this direction yielded only negative results, though, believing it to be a parasitic disease, he had instituted a complete bacteriological laboratory in the centre of the infected regions, in order to make a thorough examination of the fluids and tissues. He acknowledges that the scourge is due to an inscrutable morbid element, an infectious miasm or malarial poison, analogous to that of certain

influenzas, the intermittent and variable character of which does not permit any exclusive influence to be referred to the soil, regime, or labour. The explanation given by those who ascribed the origin of the disease to the infection arising from the putrefying animal matters resulting from slaughtering of horses, already alluded to, would be perhaps sufficient to account for the lesions observed, as the symptomatic manifestations of these degenerative changes are similar to those met with in infections due to decomposing animal matters. But, if this was the case, why is the malady not confined to Marajo? And why is it seen at Ceará, Maranhão, and Matto-Grasso, which have no communication with that island?

The professor does not believe that the same cause exists everywhere; for it is rare that the horses of Marajo are purchased for service in the capital, and, nevertheless, numerous cases happen at Belem among animals from Sertão, which is a district on the Continent. He thinks it very probable that a predisposing cause is the degeneration that occurs in the horses in these parts of Brazil, and which operates chiefly on the nervous system in general, nervous diseases being hereditary among them. The equine race is not indigenous to Brazil, for nowhere have there been found fossil traces of it; all is importation. The first horses came from Spain and Portugal with the early conquerors. A further importation was made about 1600, by the Mercenarius Monks, on their own behalf, and in 1664 their example was followed by the inhabitants of Pará, who brought all the animals they possessed from the Cape de Verdes. For two centuries no change has taken place, the horses interbreeding under the same conditions, no care being taken to prevent the evil consequences of this in-and-in breeding.

Though popularly believed to be contagious, the professor has doubts on the matter. The necroscopic lesions give no indication of its being so, and a microscopic examination of even the organs most affected is equally unsatisfactory. Besides, the appearance of the disease in a sporadic manner—attacking only one horse in one lot, and two or three in another, leaving several lots intact in the same region and living under the same conditions—the malady never appearing in an epizootic form when different lots in which it is present are collected in the same “curral” at the period of “Services”; the instances in which foals run with their diseased dams and are, nevertheless, unaffected; all these facts negative the notion as to its contagiousness. Yet, on the other hand, its modes of extension and the conveyance of the disorder are still inscrutable, and might point to the presence of a contagious principle. It is admitted that it may be transmissible by way of heredity. The conclusion arrived at is, that the “Mal de Cadeiras” is an enzoötic disease, but that it affects an intensive form, its centres vary and extend, and sometimes several years elapse between its outbreaks. In the enzoötic centres, the malady is chiefly witnessed as an enzoöty, and rarely in an epizootic form.

With regard to the symptoms, they point to pressure on and irritation of the spinal cord, as well as its nerves. The hind-quarters are rigid and the loins arched; the conjunctivæ are congested and streaked with red bands, particularly about the membrana nictitans; the mouth is dry and the jaws somewhat stiff; and the reflexes in the posterior region of the body are exaggerated. The conductivity of the spinal cord being partially interrupted in consequence of softening and degeneration of its elements, there is a reflex hyper-excitability, betrayed by rapid and exaggerated flexion movements in the hind-quarters, when the dorsal spine is pinched towards the lumbo-sacral region. It is the same with the patellar reflex, when, the limb not being on the ground, the stifle is struck. At this stage the animal is unfit for any service. Sensibility is not seriously modified until a later period. The animal can walk, and in progression there is only observed a

balancement movement. The appetite and more important functions are unimpaired. In the stallion there is disturbance of the generative functions, and impotence is particularly remarked. The circulation is feeble, and in some animals slight anæsthesia is noted in parts of the posterior limbs—or rather a kind of delayed perception of sensation when muscle or tendon is struck or pricked. The animal drags the anterior part of the hoofs on the ground. Towards the end, the sensations appear to become more painful, and the movements more difficult; the patellar reflexes are abolished, decubitus is prolonged until paralysis, emaciation, and marasmus terminate the disease, which may last from a few days to a whole year, or even longer. Rebougeon had never seen the acute form, though it is known.

After death there is generally no tympany or cadaveric rigidity, but sometimes there is slight infiltration of the subcutaneous connective tissue in dependent parts of the carcase; emaciation is more or less marked, but there are no ecchymotic spots. There is no intra-thoracic effusion, except a little in the pericardium, neither are there adhesions or congestions. Nothing of moment is to be noted in the abdominal cavity. The blood contains more white corpuscles than usual, and the red ones are irregular and crenated in outline; among the corpuscles are a great number of fine pigmented granules. Everywhere the muscles are of their ordinary volume, except in the posterior region of the body, where they are pale and wasted, especially the psoas muscles, which are, besides, infiltrated, and look as if they had undergone maceration. Diminished in volume, the fasciculi have a tendency to separate into fibrillæ, which is very readily done by means of needles. The striæ are yet remarked, and picro-carminic stains the fibrillæ perfectly. There is no fatty degeneration, and the connective tissue is full of pigment granules. The pia-mater is congested, the ventricular fluid increased in quantity, and the grey matter of the brain slightly softened. In one instance a small hæmorrhagic patch was found towards the second internal occipital convolution; the clot was about the size of a grain of maize, and surrounded by an inflamed portion, in which were crystals of hæmatine. The nerve cells have a tendency to decrease in size, and their prolongations are shorter, while there are many pigment granules. The alterations in the spinal cord are more characteristic. At the lumbar enlargement there is considerable hyperæmia of the pia-mater, and the surface of the cord itself is sometimes slate-coloured. On section, the cord is somewhat rose-coloured, owing to a certain amount of vascularisation and dilatation of the blood-vessels; there is also notable softening of the grey substance. Microscopically examined, some cells are found hypertrophied, while others are, on the contrary, atrophied, and beginning to undergo fatty degeneration; all are more or less filled with pigment granules.

The alterations in the nerves are equally characteristic. They appear to be compressed at their aperture of exit, the myeline is more or less destroyed and their substance is softened. These lesions are more particularly remarked in the posterior branches of the lumbar and sacral nerves which pass to the skin, the lateral parts of the loins, and the thighs, as well as the sacro-lumbar muscular masses.

With regard to prophylactic measures, Rebougeon is of opinion that it is necessary to regenerate the breed of horses by introducing stallions from Europe. The therapeutic measures employed have given excellent results, but they are not described in the paper.

Some pathological pieces sent to Paris were examined by M. Cornil, in the laboratory of the Faculty of Medicine, but the results were negative, so far as the discovery of micro-organisms is concerned.

THE ETIOLOGY OF STRANGLES.

To the *Deutsche Zeitschrift für Thiermedizin* for 1888 (p. 437), Professors Sand and Jensen, of the Copenhagen Veterinary School, contribute an interesting paper on their experimental researches into the nature and etiology of Strangles. As a result of these, they arrive at the following conclusions:—

1. In the pus and other discharges from horses affected with Strangles, there can be isolated a special streptococcus (*Streptococcus equi*), which is pathogenic for the domestic and field mouse, the rabbit, and the horse.

2. With regard to etiology and clinic, the disease is the same in old as in young horses.

3. It may be evolved without formation of abscess, and manifest itself only by a simple catarrh of the upper air-passages and pharynx.

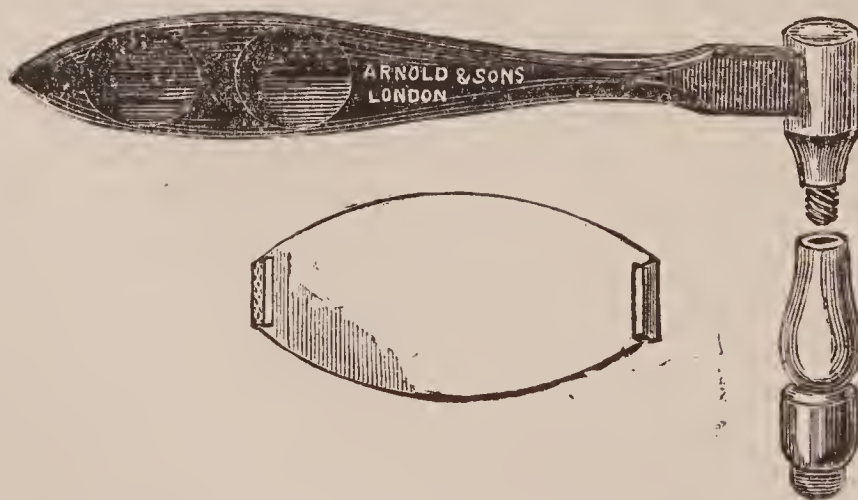
4. The streptococcus does not appear to be capable of infecting intact mucous membranes; it is probable that a pre-existing catarrh or slight mechanical irritation of mucous membrane is necessary to produce infection.

5. Intravenous introduction of the virus does not seem to produce general infection in the horse, but rather gives rise to an intense phlebitis; yet it nevertheless confers immunity against subsequent infection by the nasal mucous membrane.

6. The *Streptococcus equi* is not at present distinguishable from other micro-organisms of the same class, except by its pathogenic properties, and the appearance of its cultivations on agar-agar. They offer no special features in broth nor yet on gelatine.

APPLIANCES FOR PERCUSSION.

DURING a recent visit to Germany, amongst other interesting details, I was much struck by the extended use of percussion instruments in the clinical study of chest diseases. The appliances consist of a hammer and a pleximeter or shield, as the intermediary body, to receive the blow; the results obtained are said to be far more satisfactory than when the fingers are employed, the



sounds of resonance and dulness being more distinctly appreciated by the ear. They are specially applicable when the coat is long, as in winter and in rough-haired dogs. Messrs. Arnold and Sons have kindly supplied the engraving, and at my suggestion have made adjustable heads for the hammer, the larger for use with horses and cattle, the smaller with dogs, etc.

These instruments should be universally adopted in our veterinary schools, as their use constitutes a neat and handy method for percussion.

E. E. BENNETT,
Army Veterinary Department.

Reviews.

ROARING IN HORSES (LARYNGISMUS PARALYTICUS): ITS HISTORY, NATURE, CAUSES, PREVENTION, AND TREATMENT. By GEORGE FLEMING, C.B., LL.D., F.R.C.V.S., etc., Principal Veterinary Surgeon of the Army. (London: Baillière, Tindall, and Cox, 1889).

This is a handsomely printed and well got up volume of 160 pages, dedicated to his Grace the Duke of Westminster. It is the outcome, as the author tells us in his preface, of more than five-and-twenty years' study of the subject. In this preface, Dr. Fleming asserts, in effect, that Roaring can be cured by an operation which he has devised; and that, in his belief, the operation has brought to light much useful physiological information with regard to the larynx of the horse. He believes, too, that in connection with the operation he has demonstrated that the method of giving chloroform unmixed with air gives us the safest and best anæsthesia in the horse. This volume is another of the many works that have emanated from the pen of Dr. Fleming; and, like its predecessors, it bears the stamp of long and earnest thought and inquiry, and of intimate acquaintance with the literature of the subject in all languages.

Chapter I. is devoted to the *history of Roaring*, and opens with the very pertinent remark that "next to lameness in horses, defects in respiration are perhaps of the most importance. To be sound in wind and limb comprises, according to the popular notion, nearly all that is required in a horse; for unless capable of moving at a certain, and perhaps rapid pace, and probably exerting a great amount of strength while in motion, this animal would be of little value to man." In reviewing the history, the author has given himself no end of trouble in tracing out and recording the opinions held by the various writers on the subject, not only in this country but upon the Continent, and a glance at a few of these is not without interest.

Gibson, writing in 1725, attributes Roaring to "a thick mucilaginous matter sticking in the branches of the windpipe." Willis, in 1775, states that the wheezing proceeds from "the narrowness of the passages between the bones and gristles of the nose." Lawrence of Birmingham, in 1801 writes: "From my own observation, I have not been able to discover whether its source is the lungs, the trachea, or the nose." White, in his *Compendium*, published in 1802, says: "It seems to rise from lymph that has been effused in the windpipe or its branches, which, becoming solid, obstructs, in a greater or less degree, the passage of air." Percivall, in his *Lectures*, published in 1824, writes: "Some years have now elapsed since it was first discovered that the larynges of roarers occasionally presented us with the singular phenomenon of the muscles on one side being wasted away or absorbed, while on the other they appear to exhibit unusual volume and redness and strength of fibre. I have lately examined a horse of Mr. —'s, and in his larynx upon the near (left) side, the crico-arytenoideus posticus was very pale and shrunk to half its original size; the

crico-arytenoideus lateralis, the thyro-arytenoideus, and the arytenoideus were altogether colourless, and scarcely recognisable as muscles; but their antagonists upon the other side were unusually red and strong. Now these muscles contracting in pairs are all employed in dilating the glottis; but if one set act by themselves, this orifice is not only distorted but actually diminished in dimensions, in consequence of the arytenoid cartilage of the opposite side being drawn over it. Thus it is, then, that Roaring is here produced." French, German, and other writers are referred to, and the whole subject is treated in a most lucid and interesting manner.

Chapter II. is devoted to the various causes of noisy respiration, and these are mentioned and carefully explained. The more important are: out of training, *i.e.*, want of condition; position of head when galloped; pulling at the bridle with open mouth and retracted tongue; paralysis of the wings of one or both nostrils; fleshy or bony tumours in nostrils; pus in the guttural pouches; deformity of the cartilages of the larynx; spasm of the constrictor muscles of the larynx, and in this sentence (page 16, line 12th from the foot) the word "respiration" evidently should be "inspiration"; angina; strangles; enlarged parotids; malformation of the trachea; certain kinds of food, as the lathyrus sativus; and lead-poisoning.

"All these differences, and the causes to which they are due, need close investigation in the majority of instances, for upon the result will depend the probability of remedial measures being successful in restoring the affected animals to efficiency" (not "efficacy," as printed, see page 20, line 15th from the bottom).

Chapter III. treats of the prevalence of Roaring, and it opens with the statement that "Roaring is much more prevalent in western and northern than in eastern and southern countries. In India the indigenous horses are seldom affected, and imported stallions known to be roarers, it is said, rarely beget a roarer."

Inspecting Veterinary Surgeon Meyrick supplies some very valuable information upon this point, and states that he "never met with a case of hereditary Roaring in India, there being no roarers among either the stallions or brood-mares of the studs to which I was attached." In South Africa, native-bred horses are rarely affected with Roaring; but newly-imported horses, especially English, are very liable to the malady. At the Cape of Good Hope, Roaring is almost unknown, and a breeder of horses writes:—"I would not mind breeding from the rankest roarer you could give me. I do not believe that Roaring is transmitted from the parents in this part of the country, and I do not know of a single instance of a roarer having been bred here." He also instances cases of imported roarers becoming sound in their wind. The author then deals with the subject of Roaring in the British Army, and from statistics makes it appear that 6.14 of the horses are roarers. From our experience, we have no hesitation in asserting that the percentage of roarers in the three kingdoms is greater than this.

Chapter IV. is devoted to a consideration of the predisposing causes of chronic Roaring, and the information here again is valuable and inte-

resting. The author says that "these causes are numerous and various, and some of them are more potent and obvious in their influence than others; they may be considered in their relation to (1) climate, (2) heredity, (3) breed, (4) sex, (5) size, (6) age, (7) conformation, (8) management, (9) accidental causes."

1. *Climate*.—"Cold and damp climates appear to favour its production, not only because they are inimical to the natural vigour of horses, but also because the artificial conditions in which these have to be maintained in order to protect them from the deteriorating influences of climate, or to improve them, are predisposing agencies in themselves, tending as they do, and as we shall presently show, to develop those maladies which so frequently lead to Roaring."

2. *Heredity*.—"Of its existence I think there can scarcely remain a doubt. We do not know when Roaring first began to be observed in England, but it would not appear to have been much noticed until within the last century or two. Was the tendency to it imported into this country by foreign horses of large size? Godine, junr., long ago asserted that the defect was introduced into Normandy, in 1764, by Danish stallions which were roarers. May we not have got it among our horses from a similar source, and about the same time?"

The author now refers to the evidence submitted by German, Danish, and French authors to prove the heredity of Roaring, and further asserts that in England the instances that might be quoted in support of hereditary predisposition are very numerous and convincing.

3. *Breed*.—"All breeds are not equally predisposed to become roarers." In France, Reynal asserted that the affection was more frequently observed in heavy draught-horses than in those used for light draught or riding. In Germany, it would appear that the lighter breeds furnish the largest percentage of roarers.

Dr. Fleming's experience has led him to form the opinion that the breed of saddle-horses is more predisposed than any other; but our experience is that the heavy breeds of horses are more frequently affected, and particularly Clydesdale and Shire stallions.

4. *Sex*.—The percentage of cases, according to Dr. Fleming, is nearly equal in the British Army.

5. *Size*.—"Though it is a fact that large horses are more predisposed to become affected than small ones, or ponies, yet size cannot be looked upon as nearly so important a factor as the other influences we have been considering."

6. *Age*.—The evidence adduced under this head goes to prove that Roaring is seldom exhibited until the animal is at least six months old, and that from three years to five years is about the average period when horses become roarers.

7. *Conformation*.—"Certain conformations have been always more or less associated, in the minds of horsemen, with a tendency in horses to become affected with Roaring. In this country horses with long, thin necks—'ewe-necked'—are supposed to be more likely victims than those with better formed and proportioned necks." But Dr. Fleming

attaches no importance to the length or shape of the neck, or certain other forms of conformation.

8. *Management*.—Regarding management, or rather mismanagement, he attributes Roaring in racing stock to be largely due to the training and racing of horses at two years of age, and to the temperature at which the stables are kept, and want of proper ventilation.

9. *Accidental Causes* —Under accidental causes, reference is made to the frequency with which Strangles precedes Roaring. Among Army horses it has been found to hold the first place on the list of causes “predisposing or exciting to Roaring”; and the same remark, we think, applies to all horses, no matter what may be the character of the work in which they are engaged.

Chapter V. is devoted to a brief consideration of the symptoms and diagnosis of chronic Roaring, and as these are generally well known and understood, comment is unnecessary.

Chapter VI. gives an account of the anatomy and physiology of the larynx. It is illustrated by figures, which have the great merit of being sufficiently large to be understood. The action of the dilator muscles is frequently dwelt upon, and not without good reason. But we can scarcely admit that these muscles are *unceasingly* in action, as the author sometimes seems to imply. During expiration they must have the same rest that is given to the ventricles of the heart in diastole. Nor (as the author says) is there much dilation during quiet inspiration. But, of course, the unaffected dilator will be kept “hard at it” during inspiration in a roarer. It is noted that Möller and others maintain that the motor nerve for the crico-thyroid is the first cervical, not the superior laryngeal. According to Möller, the latter is a trophic nerve for “all the laryngeal muscles.”

In Chapter VII. the writer passes on to consider the pathology and course of chronic Roaring. The well-known unilateral atrophy of the muscles is described, and its cause traced to the recurrent nerve. On page 100, by a slip of the pen, the crico-thyroid is said to be “supplied with motor filaments by the *spinal accessory* nerve.” This should read, no doubt, *first cervical*. Writing under the heading “Course of Roaring,” a physiological explanation is offered of the fact (noted under “Pathology”) that the dilator muscle suffers first. If the larynges of man and many animals be excised soon after death, it is found that the dilators lose their excitability before the constrictors.

Chapter VIII. treats of the causes of chronic Roaring. “Mechanical” causes are defined as the impediments to respiration. “Pathological” causes, as the morbid changes, bringing about the impediments. Mechanical causes are taken first. In commencing Roaring, the sound is said to be probably produced by the vocal cord alone; this cord (of the affected side) not being sufficiently drawn aside, is thrown into vibration by the ingoing air. In advanced cases, during exertion, there can be no doubt, it is said, “that the arytenoid cartilage shares with the vocal cord in obstructing the admission of air, and renders the noise louder and of a different tone.” Further, in cases of complete wasting of the di’ator, the vocal cord and cartilage are described as passing

beyond the centre of the cavity during severe exertion, thus still further diminishing the air-passage. The explanation of this, according to Dr. Fleming, is double. In the first place, the air, in inspiration, inflates the ventricle of the affected side, thus pushing the vocal cord (and attached arytenoid cartilage) towards the opposite side. The author, however, does not record any *actual observations* of this in roarers. In the second place, the inspired air presses down the upper part of the arytenoid cartilage itself. In this case and in others one cannot avoid the conviction that we really know very little about the action of the laryngeal muscles. It is easy to see that a muscle may have a certain action. But how much do we *certainly* know of the behaviour of the muscles in the different conditions of the larynx? Is equine laryngoscopy (for the purposes of research) an absolute impossibility? The pathological causes are next dealt with. These are at once traced to the different *thoracic* relations of the left and right recurrent nerves. The left is exposed to pressure, etc., from morbid conditions. The most frequent condition, in the author's experience, is enlarged and indurated intra-thoracic glands. It is mentioned that Ferguson, in 1838, described a typical case of this kind. Three other examples of pressure are given together—one by engorged pre-pectoral lymphatic glands, one by the left thyroid gland, and one by a bony tumour. In the days of bleeding, it is said, inflammation of the jugular vein was not an infrequent cause. Dr. Fleming holds that the pulsations of the posterior aorta can hardly cause strain and paralysis of the left recurrent nerve. He points out that the anatomical relations are the same in countries where Roaring is unknown. The records of the operation of nerve-stretching in the human subject may bear upon this point. A man may be nearly lifted by his sciatic nerve, and this may be done several times at the operation. Dr. Fleming, however, seems to think that this may be a cause in the case of thoroughbreds, when used for racing purposes at two or three years of age. Or, at least, that in this way a hereditary predisposition may arise. The various inflammatory diseases of the chest—Pleurisy, Bronchitis, Bronchopneumonia, and others—are mentioned as being not unfrequently causes of Roaring. But Strangles is said to be "perhaps the most frequent cause of Roaring met with among Army horses." In this case "its occurrence in all likelihood depends upon whether the tracheal and bronchial glands—between which and the submaxillary glands there is great sympathy—are inflamed and swollen." On page 122 the word lung is printed for nerve, but the misprint is obvious. That Roaring often followed Strangles was known to Sewell sixty years ago, though in the quotation taken from his writings he does not attribute the affection to interference with the nerve. The author looks upon high temperature as not proved to be a cause of Roaring. He points out that it is often accompanied by circumstances much more likely to be at the bottom of the mischief. This is obvious in the case of Army horses during sea voyages and campaigns.

Chapter IX. contains an exposition on the "preventive and curative treatment of chronic Roaring."

1. Prevention from a sanitary point of view.

"The prevention of chronic Roaring is of the utmost importance, and should be the chief aim of those who have it in their power to carry out the measures essential to this end. They may be enumerated as follows: (a) exclusion of unsound horses for breeding purposes; (b) care in the management of young horses; (c) hygienic management."

2. Medical and surgical treatment of Roaring.

In discussing this department of his subject, Dr. Fleming says: "From Percivall's time up to a quite recent period, little has been done in the way of treatment for the defect, and that little has been, as a rule, of the most empirical kind, *due to the fact that the morbid conditions upon which Roaring depends were unknown or not understood.*"

"Now that we understand the pathology of Roaring, we are in a better position to adopt rational measures for what we may term its 'cure,' and with much certainty of successful results."

Admitting that from Percivall's day until lately little has been done in the way of treatment for Roaring, we are forced to differ from our author in attributing it "to the fact that the morbid conditions upon which Roaring depends were unknown or not understood." With all deference, we maintain that almost all that is now known and published regarding "the morbid conditions upon which Roaring depends" were known and taught by the late Professors Dick and Barlow when we occupied a student's place on the benches of the Edinburgh Veterinary College in the year 1855. In proof of this contention we transcribe the following from notes in our possession. "Roaring; this certainly in itself is not an inflammatory disease. It is a name given to that state of respiration when we have a coarse roar uttered, particularly in inspiration, etc. I (Professor Barlow) believe this affection can only be produced by, and is entirely dependent on, one pathological condition, viz., atrophy of the muscles of the larynx and wasting of the *nerve* supplying them. Those muscles which are particularly involved are the crico-arytenoidæ, etc., etc. This wasting is due to absorption of the muscular fibres and their transverse striæ, and in place of which there is deposited fat, constituting what is termed fatty degeneration. This change accounts for the pallid appearance of the affected muscles. Now this muscular atrophy has been considered by some as the immediate cause of the disease; my opinion is that, although it is the immediate cause of the sound, it is not of the disease, inasmuch as the wasting is dependent on something else, and that is, *atrophy or injury of the left recurrent nerve.* I should say, then, that the wasting of the muscles is the cause of the sound (roar), but the disease itself is immediately caused by *disease of the nerve.*" Professor Barlow then proceeds to explain how the cartilages of the larynx fall in and the dimensions of the glottis are lessened, etc., etc.

We claim, then, that the late Professor Barlow was familiar with the paresis and paralysis of the left recurrent nerve, and of the neuropathic origin of the atrophy of the muscles in chronic Roaring; and the following remark, also made by the author, we consider has no point in his (Prof. Barlow's) case: "This implication of the nerve in the morbid changes

has strangely escaped the investigation of veterinary writers *until lately*. For instance, Williams asserts that 'dissections have failed to discover any change in the nerve-trunk itself, although the animals dissected have been confirmed roarers for years previous to their death. In the form of disease involving the laryngeal muscles which commonly causes Roaring, there is no change in the nerve itself.' "

(a) Medical treatment of Roaring. Our author has not much faith in any form of medical treatment, but recommends preparations of iodine, iron, mercury, arsenic, strychnine, and electricity in the form of Faradisation.

(b) Surgical treatment of Roaring. Under this section reference is made to the following operations: cauterisation and counter irritation; tracheotomy; removal of one or both vocal cords; operating through the trachea, as performed by Günther, of Hanover, and his son, seton through the laryngeal sac; excision of the arytenoid cartilage; excision of the processus vocalis and vocal cord, etc., etc. The author then proceeds in a clear and interesting manner to describe how he felt his way to the performance of the operation which he now recommends to the profession, viz., excision of the whole of the left arytenoid cartilage and vocal cord, through an opening made in the middle crico-thyroid ligament, the cricoid cartilage, the crico-tracheal ligament, and one or more rings of the trachea.

"This perfected operation," the doctor states, "has had most encouraging results, and so far as these go, it might be anticipated that a very large percentage of horses affected with Roaring may be rendered serviceable, and perform their work without impediment in respiration."

The concluding chapter is devoted to a minute description of the operation as performed by Mr. Raymond, under Dr. Fleming's direction, and the instruments and other appliances required in the performance of the operation.

We have great pleasure in recommending the work to the members of the profession, as its perusal will afford a variety of food for mental thought and study, not only at the moment, but for time to come; and it will enable all who feel so inclined to perform the operation in a scientific manner, and without unnecessary suffering to the animals operated upon.

We understand that upwards of one hundred horses have been operated on and without a single mishap, and we sincerely hope that time will prove that the operation is not only attended with an immediate but also lasting benefit; but whether the benefit be permanent or not, Dr. Fleming has done his best to throw light upon the subject and the operation, and all impartial members of the profession will admit that he has again earned its lasting gratitude.

JAMES MCCALL.

The work before us, though treating of a matter of widespread general interest, is evidently intended for the professional reader. It will not be once doubted that the most considerable inconvenience and pecuniary loss due to Roaring justify the specialising of its study.

The 160 pages which are here devoted to it by one so eminent in his profession, and so well known to the horse-owning public as Dr. Fleming, will be eagerly perused, not only by veterinary surgeons, but by all who are interested in the subject and capable of appreciating it.

The reader will soon be convinced of the great labour which has been bestowed on the production of the book. It will be patent that wherever attainable a wide range of opinion has been brought to bear on every point, and the history and bibliography, though possibly not complete, are remarkable for their fulness.

The space relegated to the anatomy and physiology of the larynx, in which a copious and lucid text is supplemented by several clear diagrams, will afford convenient and useful reference; as apart from an intimate knowledge of the structures and functions involved, the study may not be approached with any reasonable hope of practical good.

Taking into consideration the varied and indefinite ideas which have existed as to the pathology of the condition in question, it will not be a matter of surprise if some views expressed do not coincide with those generally received. There will, however, be little disagreement as to the main points, *i.e.*, that the left recurrent nerve in some part of its course becomes so affected that paralysis of the muscles of the larynx supplied by it is the consequence, and that, resulting from this, there is an alteration in the glottal opening, which causes the abnormal sound and accompanying dyspnœa.

The causes likely to predispose to or excite this condition of nerve are extensively dealt with, and though it cannot be said that these may not be further elucidated, yet sufficient is made clear to allow of rational suggestions as to their prevention. It cannot, I think, be disputed that in a large majority of cases of chronic Roaring the structures are affected in a manner practically that laid down by Dr. Fleming.

Approaching the treatment of the affection, the writer refers to "two cases which perfectly recovered" after electricity—a form of Faradisation—in conjunction with internal remedies, and, I think happily, he does not suggest this procedure, except as a possible or tentative means in the earliest stages, when, with the aid of deobstruents and time the pressure on the left recurrent nerve is likely to be removed. We can understand that electricity, if applied frequently, may possibly maintain to some extent the vitality or irritability of the muscles which are cut off from their nerve nucleus. Unless the proper relation of the nerve endings in the muscles with their nuclei be established, I fail to see how electricity can be of any value.

For the Roaring and dyspnœa, our main concern in this trouble depending on narrowing of the glottal opening and alteration of contiguous structures, it would appear that the desideratum is the permanent expansion to the normal during the respiratory act. Dr. Fleming clearly points out that this has been recognised by him, and states that fifty-six years ago Günther proved that inter-tracheal and inter-laryngeal operations were largely tolerated. The last chapter, in which the writer discusses the mode of surgical interference which he adopts, will be regarded with the utmost interest. Here will be found a most explicit

text, illustrated by diagrams referring to sections and instruments. The operation described has been very largely carried out, and no remarkable accident has been recorded.

Some matters of detail with which our experience may not be in accord involve perhaps but difference of opinion. For instance, in my general examinations I find cart and heavy horses more commonly affected with Roaring than the lighter classes. It is certainly a remarkable statement, that among 3,000 tram-horses, there should be no case of a Roarer. My experience, and that of many continental veterinary surgeons, has been that about the same amount of chloroform is sufficient. The disparity in the proportions of ingredients with which it is advised to sponge the wounded larynx, as well as some printer's errors, are sufficiently palpable to indicate their source.

Among the most important statements in the work is that "this perfected operation has had most encouraging results, and as far as these go it might be anticipated that a very large percentage of horses affected with Roaring may be rendered serviceable, and perform their work without impediment in respiration." This from one holding the prominent position of the distinguished author, will be sufficient to commend the work to the consideration of the profession and public; and it cannot be doubted that its publication will mark an era in veterinary laryngeal surgery in Great Britain.

JOHN PENBERTHY.

TRATTATO DI TECNICA E TERAPEUTICA CHIRURGICA GENERALE E SPECIALE DEGLI ANIMALI DOMESTICI. By Dr. LANZILLOTTI BUONSANTI. (Milan: Fratelli Dumolard. 1889.)

The very distinguished and indefatigable director of the Milan Veterinary School, and who is also professor of operative and clinical surgery therein, has published the first volume of a work on Veterinary Surgery, which promises to be of great value to Italian practitioners and students. This volume treats only of the *technique* and therapeutics of general surgery, but it nevertheless contains nearly 600 pages and 440 illustrations. It is divided into two books, and each of these, again, into sections and chapters, in which the different parts of the subject are treated with great care and in ample detail, the bibliographical portion being very complete and of special value. When the work is finished we shall give it a fuller notice, as we shall then be in a better position to form an opinion of its merits.

THE BEST FORAGE PLANTS. By Drs. STEBLER and SCHRÖTER and N. McALPINE, B.Sc. (London: D. Nutt. 1889.)

This is the translation of a work which is eminently deserving of notice by botanists, agriculturalists, and veterinary surgeons who concern themselves with forage and feeding of horses. It appears that in 1882, at the request of the Swiss Agricultural Society, the Federal Assembly voted a large sum of money to encourage the cultivation of forage, and it was decided that a portion of this grant should be devoted to the production of a popular manual on the subject of forage plants.

The task was entrusted to Dr. Stebler, well known as a seed analyst and practical agriculturist, while the preparation of the plates and woodcuts was undertaken by Dr. Schröter, professor of botany at Zurich. "The result of this happy combination," says the translator, "is the masterpiece now for the first time presented in English, and destined, or I am greatly mistaken, to operate a revolution in the forage culture of Great Britain." There is no work like this in our language on the subject of grasses; the detailed or special description of each plant is perfect, and so clear that any one could comprehend it, while the part of the book dealing with the subject in a general manner is full of interest and importance. The plates are in every way commendable, and appear to be as carefully drawn as could possibly be expected. For those who desire to know all about forage plants, no better instructor can be found than the work which Professor McAlpine has introduced to English readers in a translated form which leaves nothing to be desired on the score of clearness and accuracy.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COUNTIES' VETERINARY MEDICAL ASSOCIATION.

THE general annual meeting and dinner of this Association took place on February 22nd, at the Great Western Hotel, Reading. Mr. G. A. Drewe (Abingdon) President, occupied the chair, and Mr. Albert Wheatley (Reading), the vice-chair. There were also present:—Sir Henry Simpson, Messrs. F. W. Wragg, J. D. Barford (Southampton), Wm. Wilson, Jas. F. Simpson, J. P. S. Walker (Oxford), Treasurer, C. Carter (Guildford), Hy. G. Lepper (Aylesbury), E. J. Mellett (Henley-on-Thames), A. Everard Barlow (Reading), J. Varney (Winslow), Wm. T. Hatton, S. J. Blanchard, Sydney H. Slocock, and A. A. Jones (London), and H. Kidd (Hungerford).

The HON. SECRETARY said he had received letters apologising for inability to attend from several gentlemen. They all regretted the absence that day through illness of their host, Mr. W. G. Flanagan.

Mr. J. H. Wilson, M.R.C.V.S., Newbury, Berks, was proposed as a member of that Association. Carried unanimously.

Considerable discussion followed as to the approaching election of members of Council. Ultimately the meeting decided not to bind the members in any way by a formal resolution. The name of Mr. Mulvey was mentioned during the debate, and met with the hearty approval of those present.

The PRESIDENT (Mr. G. A. Drewe) then delivered his inaugural address, as follows:—

As I was not present when you did me the honour to elect me your president for the year, allow me to take the opportunity of thanking you on this occasion.

It is not my intention to detain you long this afternoon, but I think a few words on our position as veterinary surgeons may not be out of place.

It is now nearly forty years since I entered the profession as a pupil, and the rapid strides it has made and the great changes that have taken place in it during that period have been of a somewhat extraordinary character, and, I venture to prophesy, are only characteristic of others to come still more important and progressive.

Chemistry, botany, the knowledge of anatomy, the study of parasitic

diseases, have all contributed to its advancement. To the microscope and the patient investigation of those whose province it is to make the use of it their specialty, we are indebted for the knowledge of those interesting changes which take place on the introduction of certain germs into the blood producing specific diseases, thus rendering their diagnosis clear and definite.

In therapeutics great changes have taken place, and the drastic and heroic form of prescribing has given way to a more soothing and palliative mode of treatment which is very beneficial to our patients. Within my experience, to bleed and administer a purgative was the starting point with some practitioners in treating a great many ailments to which animals are subject. Horses were brought periodically to be bled, the lampas were lanced and in some instances seared, and I remember in one situation I fulfilled being ridiculed because I refused to pour boiling oil and resin into a sinus in a case of poll evil. Those days are happily gone by, and the proceedings in connection with them relegated to oblivion. The introduction of subcutaneous injections, suppositories, etc., have simplified the administration of drugs, and are in some cases indispensable, especially where the patient shows an amount of resistance to the ordinary methods, causing the very act of administration to do more harm than the medicine would be likely to do good.

In operative surgery great advances have been made, and of the more recent are the various experiments for the relief of Roaring. Great credit is due to the gentlemen who have carried on these operations, but I cannot help placing on record a mild protest against the way in which the operations have been advertised to the public, when a great many of the profession were in ignorance on the subject, and before its practical value had been fairly tested. I trust that success may attend the operation, and that it may prove beneficial to the dumb creation.

The Contagious Diseases (Animals) Act has been beneficial in checking the spread of contagious diseases. In connection with this Act, I am of opinion that more liberty should be given to veterinary surgeons as inspectors, that they may be able to place any animal, or animals suspected of being in the incubative stage of disease in a state of quarantine to ascertain if the disease develops itself, or in the event of exposure in a market, or fair, to detain the suspects for a certain time with the same objects.

Whilst congratulating the profession at large on the advances which have taken place, not only in the development of our art, but also in our social position, I cannot help thinking a great deal is due to associations of a kindred nature to the one whose anniversary we are commemorating to-day, and I trust that under the skilful management of our Secretary this society may still continue to prosper. I have noticed from time to time a good deal has been said and written respecting the etiquette of the profession, and I hope this is a matter which will be taken to heart by all its members. The struggle to outdo one another in working at reduced fees, and in other ways overreaching our professional brethren, cannot but be detrimental to our interests, and injurious to the dignity of our calling. Let us trust that as time rolls on and our profession continues to advance we may be brought closer together and depend more and more on our motto, "*Vis unita fortior.*"

Mr. BARFORD referred at some length to the Grand Show of the Shire Horse Society at the Agricultural Hall. They all, he said, took great interest in the breeding and improvement of horses. They were much mixed up with the agricultural interest; and if carried out with judgment nothing would pay the farmer much better than the breeding of shire horses; for never was the demand for exportation anything like so great as at the present moment. (Hear, hear.) He gave notice that at the next meeting he should propose that that Association subscribe to the funds of the Society.

Sir H. SIMPSON called attention to a clay model, in the room, of a bust

of the late Prof. Robertson. After that gentleman's death, he said, Mr. Jones (now present) was asked by the students at the Veterinary College to approach Mr. Birch, A.R.A., with a view to getting a bust to place in the Board Room of the College. A cast was taken of the features of their departed friend as he lay dead; and the result they saw before them. The students had made one or two appeals for funds. Many veterinary surgeons felt that another bust should be obtained, to place in the Council Room of the Royal College of Veterinary Surgeons. That meant money; but two would not cost twice as much as one. He (Sir Henry) brought the matter before the Council of the College. He did not know that he could make any definite proposition, but he brought the matter to their notice, as Prof. Robertson was a gentleman whose memory deserved to be retained in the profession by some such memorial. (Hear, hear.)

Mr. WALKER said he, like a good many other old practitioners, was rather misled by the circular inviting subscriptions issued by the students, and he refrained from subscribing on the ground that he did not care to join the students. He thought they ought to subscribe without associating themselves with the students; and he had no doubt if that opportunity were offered to the profession plenty of subscriptions would come in. (Hear, hear.)

Mr. JONES said the students were unanimous in their desire to get it up and to keep it to themselves. Instead of going to the Council and asking for help, they appealed to the profession individually, which he thought was quite wrong. (Hear, hear.) As they were young men he hoped they would be excused.

Mr. WALKER was quite prepared to subscribe personally, but not as a Society. He thought there was quite enough *esprit de corps* to carry it out if properly put before the profession, without touching the funds of any Association.

Mr. J. F. SIMPSON thought they should allow the President of the College to start a subscription list. Whatever the Association might do as a body, of course he should himself subscribe personally. (Hear, hear.)

Mr. BARFORD, in proposing a vote of thanks to the President, said he thought they had made an excellent selection, Mr. Drewe being a gentleman of good standing in the profession, much respected, and in every way qualified. (Hear, hear.)

Mr. WRAGG seconded with a great deal of pleasure.

The vote was carried by acclamation, and briefly acknowledged.

THE DINNER.

After the meeting the members above named, joined by Messrs. Giles Ayres, Perch, and other visitors, dined together at the Hotel. A capital repast was provided. The President was in the chair, and Mr. Wheatley in the vice.

The CHAIRMAN suitably submitted the loyal and patriotic toasts.

Mr. JONES responded for the Army, and Messrs. Lepper and Ayres for the reserve forces. Mr. Lepper remarking that the yeomanry afforded excellent training for young men and young horses.

Sir H. SIMPSON proposed the toast of the evening, "Success to the Royal Counties' Veterinary Medical Association." At first he feared the success of the Association, but he was very glad to find he was entirely mistaken; because, although they had only been about five years in existence, they already numbered 55 members—all good, substantial men; and all the meetings had been eminently successful. (Hear, hear.) They had had most excellent presidents; but they also owed a great deal of their success to having had such valuable "permanent officials" in their excellent secretary and treasurer. (Applause.) By confining themselves to scientific discussion

and good fellowship, and eschewing anything that might lead them astray from the one object or the other, they would be doing their duty to themselves and to the profession. (Applause.)

The VICE-CHAIRMAN responded to the toast.

The HON. SECRETARY then gave "Kindred Associations." He said not many years ago there were only four or five such Associations in existence, but now they numbered fifteen, besides the National, and another had been either resuscitated or originated in Ireland. Mr. Kidd coupled with the toast the name of a gentleman who had been frequently "chaffed" about being a member of nearly all these Societies—Mr. Wragg. (Applause.)

Mr. WRAGG returned thanks in a neat speech.

Mr. JAS. SIMPSON proposed "Success to the Veterinary Profession." The Veterinary Surgeons' Act is, they would all agree, a good one, and had been of immense service. There were some 903 names on the original "No. 3" register; but as only forty-five deaths had been reported to the Secretary during the last eight years, the Council had thought fit to institute an inquiry, the result being that some 113 names had been removed from the register. He coupled with the toast the name of Mr. Barford. He was a consistent man in every way, he approached a discussion free from prejudice or bias, and he was almost invariably in the right. (Applause.)

Mr. BARFORD replied with particular pride and satisfaction. Referring to the great progress of the profession during the past forty or fifty years, he said there was no doubt the cattle plague visitation of 1865 was the beginning of a new era in the profession. Not only were their services now sought and appreciated in sickness and accident, but he was happy to say principles of hygiene were much more considered, and their opinions asked as to the management of animals while in health. (Hear, hear.) Again, the status of the army veterinary surgeon is now much more satisfactory than it was twenty-five years ago, a great deal of that being due to Dr. Fleming. (Hear, hear.) The Prince of Wales was a very warm supporter of the profession, and the distinctions received by Professor Brown, Dr. Fleming, and a few others at the hands of the authorities showed that talent was appreciated. (Applause.)

Mr. MELLETT gave "The Visitors," and Mr. Giles Ayres and Mr. Perch responded.

Mr. WRAGG submitted "The Health of the President" in eulogistic terms.

Mr. DREWE, in response, said it was close upon thirty-one years since he graduated at the Veterinary College. The profession had made steady and good advance, and he was sure it would continue to do so, both in the estimation of the public and on a scientific basis. (Hear, hear.) He had reserved to himself the pleasure of proposing the next toast, "The Officers of this Association," purposely to express his thanks and gratitude to both those gentlemen for the way in which they had always supported the Society. (Applause.) He hoped they would long continue to be connected with the Association. (Applause.)

Mr. KIDD and Mr. WALKER acknowledged the toast in appropriate terms.

The company then, on the proposition of the President, drank a speedy recovery and long life to the worthy host, Mr. W. G. Flanagan.

During the evening some capital songs were rendered by the President, Messrs. Giles, Ayres, Lepper, Perch, etc. H. KIDD, *Hon. Sec.*

EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE members of the Eastern Counties Veterinary Association held their half-yearly meeting at Norwich, on February 12th, 1889. In response to an invitation to all veterinary surgeons in Norfolk, Suffolk, and Cambridgeshire, by the president, John Hammond, Esq., of Bale, a large number met to luncheon,

at the Bell Hotel, prior to the business meeting. At its conclusion the high appreciation of Mr. Hammond's worth as a president was emphatically shown by the most hearty manner in which all present responded to the toast, "The Health of the President," proposed in very appropriate terms by Mr. Shipley. Mr. Hammond having replied, an adjournment for a few minutes followed.

Having reassembled, the minutes of the last meeting were read.

The PRESIDENT then proposed, and Mr. Low seconded, that any discussion about to follow on these minutes be limited to forty-five minutes, in consequence of a great deal of important business having to be got through.

Mr. JAMES SIMPSON then commenced a reply to the charges brought against him at the Cambridge meeting by Mr. Banham, viz., want of fidelity to the contract entered into two and a half years previously at Cambridge, as to election of members of Council.

So elaborately and exhaustively did Mr. Simpson conduct the defence of his actions that just forty minutes were occupied doing it. Every charge recorded in the minutes was taken separately, and every denial supported, as he told the members, by documentary evidence, which evidence all were invited to inspect under his immediate supervision.

On Mr. Simpson resuming his seat Mr. Low proposed, and Mr. JAMES GOOCH seconded, "That the members of this Society are satisfied with the explanation given by Mr. James Simpson as to the charges made against him at the Cambridge meeting." The motion was carried, and thus terminated this very important question.

The SECRETARY next read a letter from Sir Henry Simpson denying *in toto* that he had ever, at the Royal Counties meeting or elsewhere, said one word prejudicial to the election of the candidate of the E.C.V.M.A. for the Council.

Mr. OVERED remarked that after accepting Mr. James Simpson's explanation as satisfactory, we ought also to accept that of Sir Henry. He therefore proposed that "Sir H. Simpson's explanation is satisfactory."

Mr. S. SMITH seconded this, and the motion was carried.

The election of officers for ensuing year was next proceeded with.

Mr. J. E. Kitchin, of Norwich, was unanimously chosen President.

Messrs. William Bower, F. Low, and F. E. Auger, Vice-Presidents.

Mr. R. S. Barcham was re-elected Secretary.

The next meeting was arranged to take place at Cambridge.

Mr. F. Low exhibited an extremely interesting pathological specimen, "The sloughed portion of bowel, in a case of intussusception," the animal still living.

The PRESIDENT next called upon Mr. William Hunting to read his paper entitled

PULMONARY INFLAMMATION IN HORSES.

I hope the title of this paper has not suggested that I am about to produce an exhaustive and systematic essay. I think perhaps Clinical Notes on Pneumonia would have been a better title. At any rate I only intend to refer to some points which are not definitely accepted, and to one or two about which I find myself not in agreement with authorities.

Under the term Pulmonary Inflammation may be included the three diseases usually described as Bronchitis, Pneumonia, and Pleurisy. These three names are convenient, but are seldom quite applicable to any disease seen in the horse. I certainly never saw a fatal case of Bronchitis, but I have seen very many of *Pneumonia* in which the bronchial symptoms during life were rather extra prominently marked. Bronchitis in the horse, as a disease due to the extension of inflammation from the head or throat, I do not recognise. I have only seen it in cases which I should describe as congestion or inflammation of lungs with more than usual mucous *râle*. Practically pulmonary disease in horses consists of Pneumonia or Pleurisy.

The latter generally give rise to some superficial inflammation of the structure of the lung, but to such a slight extent that we may almost say Pleuropneumonia is an uncommon disease in horses. We certainly have frequent fatal cases of Pneumonia without a trace of Pleurisy, and we have fatal Pleurisy with so little lung change that we can find no portion of the organ which shows more than slight congestion.

Pneumonia and Pleurisy in the horse are two distinct and separate diseases, frequently occurring without being complicated one by the other.

What causes operate to produce one or the other? Is the differentiating cause to be sought in the horse, or in the outside circumstances?

The older books on veterinary medicine seem to suggest that Pneumonia was the more common fifty years ago, whilst my own experience is that Pleurisy prevailed twenty-five years ago much more frequently than Pneumonia, whereas lately I have seen a great preponderance in the number of cases of Pneumonia over Pleurisy.

Of course this experience on my part may be only due to the circumstances of the practice I saw then and see now. In the olden days we read that ventilation was badly arranged and that stables were kept close and hot.

Such a condition would seem especially favourable to the production of Pneumonia, but I cannot reconcile this with the fact that from a stable perhaps the coolest and best-ventilated I have ever known I lately saw a very large number of cases of Pneumonia.

I don't mean to say that a hot, close stable is not more likely to cause Pneumonia than a cool, well-ventilated one. Probably if the stable I refer to had been hot and close our death-rate would have been doubled. What I do *not* understand is why our cases were not chiefly Pleurisy.

That *cold* is a potent factor in the production of both Pleurisy and Pneumonia I have no doubt. I do not mean by "cold" a prolonged period of constant low temperature, but a period of sudden and violent alternations of temperature. Horses and other animals graze in fields all the winter, and seldom suffer from pulmonary inflammations. It is not in the *depth* of winter these diseases are most prevalent, but in November and March, when the thermometer may vary twenty degrees in the course of twelve hours.

The effects of changes of temperature in the production of pulmonary inflammations are well indicated by the fact that no such disease is seen in horses when these changes are absent. In coal-mines the temperature of the air does not vary ten degrees all the year round—not from the hottest day in summer to the coldest in winter—and no respiratory disease exists there.

This fact seems to me to bear strongly upon the theory we have recently had stated, that Pneumonia may arise as the result of contagion. I know no clinical facts which point to Pneumonia in the horse being contagious. If it were, we should expect to find it arise irrespective of cold, and in some cases to detect some direct connection between an outbreak and a previous case. I think we never see a case in which "cold"—*i.e.*, exposure to an atmosphere very much lower than that to which the horse has recently been accustomed—is not distinctly traceable as a factor in its production.

I may be reminded that horses die from being over-ridden in the hunting field; that they die in harness in the hottest days of summer; that they die at work in some excessively hot mines; and that in each case the prominent *post-mortem* lesion is engorgement of the lungs with blood. These cases I do not call Pneumonia; they are simple engorgement, and more correctly designated Pulmonary Apoplexy. In all such cases there is great exhaustion, and death occurs more rapidly than in the cases of inflammation. The lung tissue is obstructed, not by the products of inflammation, but mechanically by the over-distension of blood-vessels. I think in most cases of pure Pneumonia we find the same condition of exhaustion present in some degree.

It is possible to kill a horse by over-work, by cruel and brutal over-riding or driving, no matter how good his condition, but the fatal result is easily reached with a horse out of condition by even ordinary hard work.

Exhaustion and cold combined are the great causes of inflammation of the lungs.

In omnibus and tramway stables there is a considerable mortality from pulmonary inflammation. For every old, seasoned horse that falls a victim we find fifty new, young ones. The young ones are often fat—*always out of condition*. It requires three months' steady work to get a young, sound, strong horse into condition for omnibus work, and it is during this initiatory three months that death from chest affections is most common. Want of condition, *plus* fast work, causes exhaustion, and then we only want cold, changeable weather to produce inflammation of the lungs.

I do not call exhaustion a predisposing cause; it is a direct exciting cause of Pneumonia. In many cases we find young, strong horses affected by the same conditions of work and surroundings that produce no effect upon older horses with little more than half their physical strength. The exhaustion is not the same in each case; the old horse may be muscularly exhausted (tired in his limbs), but his vital organs still possess sufficient tone to react as soon as his work ceases. The younger horse seems to fail in recuperative power, and especially is this marked in the lung tissue.

The fast work done by horses increases the respiratory movements, and therefore the flow of blood into and through the lungs. This natural engorgement of the pulmonary vessels in a horse in hard condition subsides if no external circumstances, such as close, badly ventilated stables or exposure to cold which chills the superficies of the body, are allowed to prevent it. The exhaustion which I wish to claim as a direct exciting cause of Pneumonia seems to depend upon a want of tone in the blood-vessels of the lungs, which are unable to react and control the state of distension caused by fast work.

I rather incline to think that the difference in cause which determines an attack of Pleurisy from one of Pneumonia lies in the state of the blood-vessels of the lungs. Cold will cause *Pleurisy* in a horse without any further etiological conditions; but cold causes *Pneumonia* when the blood-vessels of the lung are wanting in tone, or when they are partially engorged from the increased respiratory action of fast work.

A clipped horse I should expect to be more liable to Pleurisy, and a long-coated one to Pneumonia. Horses, in cold and variable weather, idling about, waiting at shops and houses, alternately with short, sharp runs, would be more predisposed to Pleurisy; so also would horses doing slow work; whereas those doing fast, continuous work would more likely be attacked with Pneumonia.

Symptoms and Diagnosis.—In clear, uncomplicated cases we have no difficulty in diagnosing Pleurisy and Pneumonia in the horse, especially if we see them from the commencement. I must confess, however, that on one or two occasions I have found, on a *post-mortem* examination, effusion in the chest when I only expected Pneumonia, and nothing but Pneumonia when I quite expected Hydro-thorax.

My skill in auscultation is very slight, and I do not trust much in it now. I cannot always detect a splashing sound when I know there is effusion into the chest, and the utter absence of respiratory sound below a certain line may exist with consolidation of the lung, as it does with effusion.

In the early stages of Pleurisy the pain evidenced by pressure in the intercostal spaces is most marked, but such evidence is very much discounted when both sides have been blistered. The line of the abdomen, so often noticeable in Pleurisy, I have seen in Pneumonia, and the peculiar lift in the abdominal muscles almost diagnostic of water in the chest I have often seen in the last stages of pure Pneumonia.

The character of the pulse in the early stages of both diseases is of great help, being hard and wiry in Pleurisy, but full and compressible in Pneumonia. In the latter stages of both diseases it, however, becomes very similar—merely small and weak. I think intermission is most common in Pneumonia.

The cough is very diagnostic of the two diseases, being seldom present in Pleurisy, and always of a short, painful, catchy character; whereas it often exists in Pneumonia, and is not so short and painful.

The pain evinced on movement differs in the two diseases, being very marked in the early stages of Pleurisy, and accompanied by grunting; whereas thoracic pain and grunting in Pneumonia are most marked in the latter stages.

On making *post-mortem* examinations of horses which have died of Pneumonia it is remarkable what differences we find in both the quantity and quality of lung changes that have taken place. Sometimes we wonder what caused death, and in others how the horse managed to live so long.

Very seldom have I found only one lung badly affected in an uncomplicated case. Generally both are engorged with blood. Very seldom do we find in the horse the same extensive consolidation of lung as is seen in cattle which have suffered from Pleuro-pneumonia. In no case where I had reason to believe that the attack was a primary one, have I found grey consolidation and only in those of some duration have I found the more common red consolidation.

In cases of abscess or purulent infiltration of lung I have always found either red consolidation or grey. I do not go so far as to deny that a first attack of Pneumonia may be of such intensity or so prolonged as to lead to abscess or purulent infiltration, but I confess I have not seen a case in which I was satisfied that such a result was solely due to a primary attack.

My experience leads me to think that in every case in which stinking breath occurs during life—a symptom I consider proof of purulent disease—there has been a previous attack which has left some consolidation.

This one point is my chief reason for introducing the subject to your notice. I shall offer my reasons for it, but as my practice is entirely amongst horses of five years old or over, and in town stables, the experience of your practitioners, in healthier conditions and amongst younger animals, may perhaps correct my opinion.

It has been my experience to meet with a number of cases, occurring within a few days of purchase, in which Pneumonia has on the second or third day been accompanied by stinking breath. In two days more death has taken place. In two or three cases the breath was foetid in twenty-four hours after the first sign of lung disease, and death ensued in twenty-four more hours.

In all these cases a *post-mortem* showed either abscesses or purulent infiltration, but never without well-marked portions of grey hepatisation. In some I found a large mass of red consolidation, with only small patches of grey. In most the patches of grey were not accompanied by any firm red consolidations.

Amongst the horses of a stud which I knew well, and had known for years, we had at times cases of Pneumonia in which death was preceded by stinking breath; in every one of these I was able, by referring to their number and looking back in our register of diseases, to find a previous attack of pulmonary inflammation registered against that horse. In all these I found after death portions of grey consolidation, and I conclude that this condition is a necessary antecedent lesion to purulent disease of lungs.

These facts I would explain by saying that in the most intense cases of pulmonary inflammation death takes place from exhaustion and suffocation long anterior to the time necessary to effect the changes giving rise to grey hepatisation.

In prolonged cases where the inflammation is not sufficiently violent to

destroy life by the obstruction offered to respiration grey hepatisation may occur, but if the horse be properly taken care of the process does not kill, and does not cause the formation of pus either in abscesses or diffused amongst the lung tissue. Of course a relapse at this time may give rise to purulent disease and the accompanying stinking breath, but such an event is just what I say does occur.

Grey hepatisation I take to be a stage in the process of inflammation in which consolidated tissue loses its colour, and undergoes degenerative changes, rendering them capable of gradual absorption, or sometimes of further hardening. In any case such material is largely made up of broken down and degenerated tissues, which are poisonous and capable of giving rise to purulent disease should they in any way obtain access to the surrounding tissues.

A lung containing such material, if it be the seat of an inflammatory attack, fails to retain the degenerated matter in isolation; the grey matter escapes into the surrounding inflamed tissues, and septic infection is the result.

We see a similar state of affairs in lungs suffering from other diseases, in which morbid changes have resulted in masses of degenerated tissue being formed.

In Glanders and in Tuberculosis we may have large masses of the lung tissue broken down, but retained by the surrounding walls of hardened structure. These exist for very long periods of time without producing septic effects; but if the organs affected are invaded by acute inflammation stinking breath soon gives evidence of septic complication, and death is the usual early result.

I believe that stinking breath and purulent disease accompanying Pneumonia are always evidence of the prior existence of degenerated portions of lung, usually from a previous attack of Pneumonia in the horse, but it may be from such deposits as are caused by Glanders or Tuberculosis.

Upon the correctness of my observation depends an important medico-legal question.

I should not hesitate to say that a newly purchased horse which developed a stinking breath as the result of Pneumonia was unsound when purchased. I do not believe that grey hepatisation can take place under at least one month, and if the horse looked well and active I should say at least three more months had elapsed since the primary attack had passed off.

Every case of stinking breath does not die, but not one in a hundred are any more good for fast work. I believe even a mild attack of Pneumonia leaves some consolidation, and this is never cleared up in less than six months. Recovery is far more rapid when a run at grass can be obtained than when only a town stable is available for the convalescent animal. There are just one or two more conditions in connection with pulmonary inflammation I should like to mention, so as to "draw" the members present, and thus test my observation by comparison with theirs.

In cases of bad sore throat the danger of giving drinks is evidenced every now and then by a more or less sudden death—death in say three or four hours. Such cases present on a *post-mortem* examination frothy mucus in the trachea and bronchii, and complete black engorgement of the two small anterior lower lobes of the lung. What is the cause of death in these cases? Not the amount of lung rendered inactive, because we have evidence in other cases that life has been prolonged when a much greater extent of lung tissue has been quite useless. I suppose the frothy mucus must be a great obstruction, and I also fancy there must be some spasmodic action of the lungs which obstructs respiration, aided probably by similar spasmodic action of the glottis.

Acute septicæmia is a condition I have twice seen as the result of an attack

of Pneumonia affecting lungs previously diseased by grey deposit in their substance. The noticeable symptoms were shivering, pain, intense fever, and violent purging, followed by death in from twenty-four to forty-eight hours.

Cerebral symptoms I have twice seen accompany Pneumonia, or rather perhaps I should say Pulmonary Apoplexy, for the cases both died within two hours of reaching the stable. No *post-mortem* of the brain was made, which I regret exceedingly, as I cannot even guess whether there was previous brain disease, or whether the violent convulsive symptoms were directly due to the pulmonary condition. In neither case did I observe any old standing disease of the lungs—nothing but intense engorgement.

Treatment.—Every horse that is found “blowing” is not, I think, the subject of inflammation of lungs, but if he be permitted to remain in a hot stable, and the “blowing” continue, he most certainly will be.

The inflammatory process tends to the same course in the lungs as in every other tissue, and treatment must be directed to the stage we have before us.

First, active congestion, during which the blood is increased in quantity and in flow.

Next, passive congestion, in which there is increased quantity with decreased flow.

And then inflammation, in which increased quantity of blood is accompanied by decreased flow and more or less stagnation, with exudation through the vessels.

In “blowing” we have active congestion, and we have every right to hope that proper treatment in this stage may lead to subsidence, and a speedy return of the circulatory balance with very little local injury.

In this stage the first necessity is pure air and plenty of it, diffusible stimulants, and clothing to the skin. Recovery should be evident in an hour or two, or we may fear the next stage of passive congestion. Should the extremities not regain their normal temperature, should the pulse remain high and the respiratory movements continue rapid, I repeat the diffusible stimulants and apply external stimulants to the chest. I never hesitate to use external stimulants if a case of “blowing” continue over two hours after the administration of active diffusible stimulants, nor would I wait so long if great coldness of extremities accompanied it.

How do external stimulants act? Not locally, I think. I do not believe applications to the skin of the chest have a direct action on the lungs; they act on the nervous system, and would probably produce as good an effect if put on the back or the belly. I never use cantharides blisters, only mustard or turpentine liniments. When Pneumonia is established I prefer hot rugs to the chest, and do not continue the diffusible stimulants to any great extent. I have a horror of continually drenching a horse with alcohol in diseases which I know will extend over many days and be accompanied by great loss of appetite. I think such treatment injures the stomach and destroys the appetite, whilst it interferes with digestion. The most important detail is fresh air and plenty of it. I tie the horse's head to the open door, and keep him there for days, protecting the body by warm clothing. In medicine I trust little, but devote attention to changes of food to induce the animal to eat. When food is obstinately refused I give oatmeal gruel, milk, beef-tea, and grass when I can get it. Frequent administration of medicines entailing raising the head is much to be deprecated, as it causes the horse pain and worry, and increases his respirations for a long time afterwards. When debility is great I think I have seen good results from *nux vomica* and *zingiberis* given in a ball. I never give physic or sedatives. *Aconite* and *belladonna* I have not employed in Pneumonia for twenty years, nor do I believe in the

use of potass and ammonia given with a view to some supposed action on the blood. Diuretics I employ throughout the case, and stimulants sparingly. I have noticed that dry frosty weather favours recovery, but that the continuance of a thick London fog for a few hours retards every case, and frequently kills the bad ones.

The CHAIRMAN, after remarking on the excellency of the essay, said he did not wish to call on any particular member to reply, but he hoped they would all join in the discussion.

Mr. SANTY said his experience was very limited as to Pleurisy and Congestion of Lungs, but he had seen a very great deal of what he called "Epizootic Catarrhal Fever." This affection would—despite what treatment you adopted—run its course for about nine days, when you would get a very rapid recovery, or else the animal would become worse, showing signs of either blowing or biliousness. In the blowing cases he applied a blister to chest at once, gave plenty of nutriment—eggs especially; if he could get them—and not much medicine; he considered that hot rugs, if judiciously applied, were often beneficial.

Mr. WM. BOWER wished to ask the essayist whether, in the event of lungs being left more or less hepatised from an attack of Pneumonia, the second attack is produced from cold or over-work.

In reply, Mr. HUNTING said he had never seen it produced by cold without work.

Mr. JAS. SIMPSON believed in hot rugs in the early stages both of Pleurisy and Pneumonia. Stimulants he had found of much service, especially carb. of ammonia combined with ext. gentian. He always gave it, whether pulse was high or low. His experience was that Pleurisy was quite as frequent now as formerly.

Mr. SHIPLEY thought that in the early stages there was nothing to equal hot rugs for inflammatory diseases of the chest, provided you could get them properly applied; if not properly applied he considered them injurious; in consequence of the great difficulty, almost impossibility, in getting proper attention to hot rugs in country places, he had quite gone back to the treatment of sixty years ago, viz., cantharides blister to sides, and he had never seen any bad results from it. He liked stimulants and quinine, and plenty of nourishment; was of opinion that he had seen contagious Pneumonia.

Mr. JAS. GOOCH spoke in favour of both hot rugs and blisters, with a minimum of medicine.

Mr. URQUHART had recently treated several cases with digitalis and carb. ammon., and had every reason to be satisfied with the result.

Mr. JOHN HAMMOND spoke highly of quinine and alcohol in early stages, thought that quinine lowered temperature very quickly; he usually applied blisters. He felt certain that he had seen a contagious as well as a non-contagious form of Pneumonia.

Mr. HUNTING, in reply, said he was very pleased with the reception his paper had met with and the discussion it produced. He did not believe in two forms of Pneumonia in the horse, and as to use of alcohol, although beneficial in early stages, he considered it very injurious to continue for long.

The meeting terminated with a most cordial vote of thanks to Mr. Hunting for his excellent paper, and to Mr. Hammond for acting so ably as chairman.

R. S. BARCHAM, *Hon Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

A MEETING of the above Society was held in the London Hotel, Edinburgh, on February 20th, the President, C. Cunningham, Esq., in the chair.

Present:—Messrs. Pottie, Robinson, Hutton, Storrie, Aitken, Boyd, Spreull, Thompson, Love, Bates; Professors Williams, senr. and junr., Lewis, McAlpin

and Hunter; Mr. Connachie, Mr. Young; some friends, and the representatives of the local press.

The following gentlemen were elected members of the Society:—Messrs. J. Cameron, M.R.C.V.S., Berwick; P. Manuel, M.R.C.V.S., Hawick; A. Bates, M.R.C.V.S., New Veterinary College; Professor Ivison Macadam, New Veterinary College.

The following gentlemen were nominated for membership:—Messrs. T. Connachie, M.R.C.V.S., Galashiels; T. Kay, M.R.C.V.S., Lochee; Love, M.R.C.V.S., Leith; and for hon. membership Mr. Young, Editor of the *N. B. Agriculturist*.

Letters of apology for absence from a number of members and friends were intimated.

In the absence of Prof. W. O. Williams, the SECRETARY opened the deferred discussion on Mr. Storrie's paper dealing with the measures to be adopted for the eradication of Tuberculosis.

The discussion was continued by Messrs. POTTIE, ROBINSON, CONNOCHIE, Professors WILLIAMS and HUNTER, and others, and was concluded by Prof. W. O. WILLIAMS moving as follows:—"That this Society, thoroughly believing that Tuberculosis is a systemic and contagious disease, urges upon Government to—

(1) Stop the sale of milk from animals suspected of being affected with Tuberculosis.

(2) Suppress the consumption of meat from tubercular animals.

(3) Give compensation for a limited number of years.

The PRESIDENT then called upon Mr. H. THOMPSON, M.R.C.V.S., Aspatria, who read the following paper on "Some Difficult Cases of Parturition met with during Thirty Years' Practice."

Mr. Chairman and Gentlemen,—The season is drawing nigh when country practitioners will be looking forward, some with great anticipation of having a good time out of the spring cases of difficult parturition; while others—old hands—will dread the ring of the midnight bell, calling them out of their snug, warm beds, for a long, cold drive; then to strip to the bare skin in some cold, comfortless, through-draughty byre, or in a filthy, damp loose-box. I may say, gentlemen, that I belong to the latter class, and, like Macbeth, say, "Hold, enough!" In bringing this paper before you, I will only take one case of each of the different presentations as an illustration of the many I have met with during a practice of thirty years. The same mode of operating usually answers in both mares and cows. First, is the natural presentation in a fat short-horn heifer; first calf. These cases have been very frequent with me, where the os uteri and ligaments are quite relaxed, but the vulva is constricted. The two fore-feet protrude through the vulva, and are usually seized by the attendants and pulled till both shoulders and head are jammed tight in the vagina. The foetus is, however, generally extracted with a great deal of main strength and stupidity, and very often the vagina is so much torn that fatal hæmorrhage takes place. When the mother and foetus are very valuable, my services have often been called in. My mode of procedure is to oil the hand well, introduce it into the passage, examining the head and all its surroundings; then pass a strong cord over the head and behind the ears of the calf, making a loop in front, outside the vulva. Then, by gentle traction on the cord, and manipulating with the other hand, I extract the head, occasionally pulling first one leg and then the other, when the foetus is got away. But at times I meet with other difficulties. Well do I remember calving a very valuable heifer belonging to Sir Wilfrid Lawson, Bart., of Brayton. The bailiff and several of the labourers had pulled at the head and fore-legs from 9 a.m. till 2 in the afternoon, when one of the men said he would pull no longer, as he considered it cruel to punish the animal, as it was evident that

all was not right. They then sent for me, and on reaching the place I found the head and fore-limbs outside the vulva. I had no difficulty in passing my hand over the shoulder, as the foetus was small. I found the abdomen of the calf enormously enlarged, and full of water. I said nothing to the attendants, but took my embryotomy knife and plunged it into the side of the calf, making a good opening, and at the next pain the foetus came away without any assistance. I was extremely gratified to see the astonishment portrayed on the countenances of the bystanders, who had been tugging and pulling for over five hours. The animal did all right afterwards.

The next presentation I will take up is a very common one, both in the mare and the cow. It is where the two fore feet are presented, while the head is bent back, with the nose pointing behind the elbow. This case is sometimes very troublesome, but if called early, it is simply enough managed by passing a cord to the under-jaw, and giving it to an assistant to hold; then by pressing the foetus back, and manipulating the head over the shoulder, I get it into the natural position, and the operation is soon finished. But sometimes, too frequently, some one has been there before me, and I find the foetus dead, conphysematous, and the uterus contracted on its contents, and a nasty acid secretion is found in the womb, which prevents the hand being introduced with ease to make examination. In these cases, I generally have a quantity of linseed jelly made, which is strained, and then injected into the womb with Reid's Patent Enema Syringe. This is a great help in all protracted cases. It distends the walls of the uterus, and acts the part of the natural fluids. If I cannot get the head into position I proceed to remove the forelegs by passing an embryotomy knife as far as I can reach on to the shoulder of the foetus, drawing the knife carefully and firmly along the whole length of the limb, cutting through the skin from the shoulder to the fetlock, or middle of the shank, as required, then with the fingers skin the legs up over the shoulders, and as far as I can reach. Strong cords have already been attached to the pastern, or above the knee, if practicable. I cut through the pectoral muscles and pull the limb away. The same is done with the other fore-leg, and having lost the support of the fore limbs, which have been holding it up, the foetus drops down to the bottom of the womb. There is then a chance of reaching the head, and by the use of hooks sunk into the different parts of the neck, pressing the body of the foetus back, I get the head into position, and extract the partially dismembered body. A somewhat similar presentation, but a very formidable one in the mare, occurs where the fore-limbs are found projecting from the vulva, with the head bent back and lying over the quarter of the foetus. In fact, when the foal is got away its face is so concave that it fits exactly to the quarters. As I have already said, this is a very formidable presentation, and a frequent one in mares, for two or three labour pains are quite sufficient to jam the foetus against the pelvis of the mother. I have made attempts without number to reach the eye socket, but could never touch further than the ear-tips; in fact, I believe it is impossible to turn the foal's head round, so long as the fore-legs are sticking out of the vulva, holding the foetus up as it were, against the spine of the mother. Gentlemen, this is the presentation that, thirty years ago, caused such a commotion in the agricultural papers when Professor Gamgee failed to extract a foal from a mare at Burntisland. After working several hours, he pithed the mare, which set the late Professor Dick and others writing to the newspapers. The spring following, when a student, I read a communication before the Edinburgh Veterinary Medical Society, on difficult parturition, which I will presently refer to, as the case is still unique. Shortly after the reading of my paper, a case occurred a few miles out of Edinburgh, on a Sunday morning, when Professor Dick sent for me to go and operate, which I successfully accomplished under the supervision of the

late Professor Strangeways. And, gentlemen, I see one or two of my old college chums before me, who will remember Professor Dick lecturing on the case for several afternoons in the following week, more particularly so when Mr. Gamgee's students were present at his lectures. But to proceed, When I meet a case of this kind, I make a very careful examination, and if I cannot reach further than the ear-tips, I neither waste my strength nor that of my patient, but proceed at once to cut the foal away in the manner already described in the preceding case, by removing the forelegs and turning the head round. But I have met with cases of this kind both in the mare and cow, where I had to cut through between the ribs, twist one or two off, insert my hand into the thoracic and abdominal cavities of the foetus, and remove their contents, before I could get the head right for extraction.

There are several others, which I will call minor cases, where the fore-legs are presented and the head turned on to the shoulder, or it may be with the nose pointing into the flank; or again, the head may be turned on to the foetus' back, with the lower jaw upwards. These are removed in a somewhat similar manner to those already described, securing the legs and bringing the head round with cords or hooks, meanwhile pressing the foetus back into the body of the womb.

I have also had the fore-legs presented with the head doubled down under the neck, and the occiput of the foetus presented at the pelvic brim. I generally secure the legs with ropes, also put one round the lower jaw, or a hook into the eye-socket, press the foetus back, and lift the head into position.

A somewhat formidable-looking presentation is met with, in which you have all the four feet in the vagina with the head thrown back out of reach. This can be made a very tedious and long operation, or very short, according to the manner of going about it. Well do I remember the first case of this kind, when I was with Mr. Carlisle, of Carlisle. An unqualified practitioner had worked from 2 till 10 p.m. We were sent for, and on arrival found both man and mare pretty well exhausted. He had been trying to put the foal into a natural position, by pulling the fore legs forward, pressing the hind ones back, and endeavouring to turn the head, which was lying on the quarter. As the two fore legs were projecting out of the vulva to above the knees, we removed them in the manner already described; then attached cords to the hind pasterns as they were just behind the brim of the pelvis of the mare. We pulled these forward, pressed the chest back, and removed the foetus. This is a very common presentation in my practice. After fully satisfying myself, by careful examination, I attach cords to the hind pasterns, press the fore limbs back, pull first one hind leg and then the other through the vulva, and generally succeed in removal without any cutting whatever. But it frequently occurs that some one has been before me, and has pulled the fore legs too far out to be returned with safety to the mother; I then remove them at the shoulder, and take the hind legs as already described.

The next example I will take up will be that of Breech Presentation in the mare. When the tail only is presented, and you cannot find the point of the hocks, the case looks desperate. I will never forget the first case I saw when I was apprenticed to Mr. Fisher, of Whitehaven, thirty-four years ago, where two fully qualified veterinary surgeons and a quack worked sixteen hours on the case. The three operators were men standing good six feet high, with long reach; but they never could touch the hocks, nor pass a cord round the legs. They relieved each other in the work, but their united efforts failed to remove the foetus, and the mare was shot. This case set Mr. Fisher thinking, and he devised my present mode of operation, and was the first, to my knowledge, to put it into practice. I have met a number of these cases, and generally succeed in extracting the foal in from two and a half to three hours. After careful examination, and satisfying myself that I cannot get the legs, only the

tail and quarters to be felt, I waste no time, but introduce my finger embryotomy-knife, reaching as far over to the stifle of the foetus as possible; then I plunge the knife through the skin, and cut steadily through the tensor vagina (*Tensor fasciæ latæ*) and gluteals (Ext. and Max.), over the hip joint towards the tail, cutting and tearing down the tissues until I get to the joint. Then I divide the ligamentum teres, rather a difficult job, set the head of the femur at liberty, attach a good strong plough-cord around the neck of that bone, give it to an assistant to draw, then with the knife divide the muscles on the inside of the thigh, and for this purpose I find nothing beats the ordinary shoeing knife. The greatest difficulty is in cutting through the fascia and skin inside the thigh; but you will succeed in this as the limb is drawn top-end foremost out of the vagina. When the leg is removed, I next cut into the abdomen, pass in my hand and tear out all the viscera, both abdominal and thoracic, and attach a rope to the pelvic bones through the obturator foramen. I have an attendant steadily pulling while I press the remaining leg against the now emptied belly, and lift the foetus into the mare's pelvis. This usually succeeds; but I have met with cases where I have had to remove both hind legs, as well as the viscera, before delivery could be accomplished. The next presentation falling to be noticed is where the hind legs have been presented transversely across the womb, with the points of the hocks opposite the os uteri, and neither the feet nor the stifles within reach. I have with difficulty cut one leg off by the hock joint and divided the tendo Achilles of the other, flexed the shank against the front of the tibia, first passing a cord round the joint, and then succeeded in extraction. One of these cases was about the hardest I ever met with.

Where the points of the hocks are found at the brim of the mare's pelvis, by pressing the foetus forward with the repeller, and pushing the hocks up towards the spine of the mother, with my hands round the toes, flexing them against the fetlocks, I succeed in getting the hind feet forward, with delivery. In consequence these breach presentations are generally very simply remedied in the manner just shown.

Ectopia abdominis in the calf, where the hind legs are doubled forward over the back and on to the shoulders, with head and fore extremities flexed backwards, also on the shoulders. The walls of the abdomen are reflected partly over the limbs and head, while the bowels are floating loose in the uterus of the cow. I proceed by removing all the abdominal viscera of the foetus, then with a good knife—shoeing knife for preference—cut through the spine and reflected integuments, the latter of which is the more difficult; then with hooks, take either the hind or fore portion—whichever is most favourably presented—and pull it away.

Ectopia cardis and *Ectopia cereбрalis* I have met with, but they are generally easily enough got away. The case that Professor Dick sent me to, when a student, was one of *Ectopia cereбрalis*.

Hydrocephalus in the calf I have also come across, where I simply pass the embryotomy knife into the bladder-like head, when extraction becomes simple. I never had a case of a calf with double heads, nor one with two bodies joined together. Twin calves I have delivered on many occasions, being very careful in examining and securing the legs proper to each calf. I have sometimes seen the foreleg of one, and a hind-leg of another calf, drawn into the passage, and the head of one and the legs of another.

I have come across several cases of constriction of the os uteri in the cow; it is known in Cumberland as "Horney Lyes," and, writing from memory, I have only used the knife about three times, and then only making three slight incisions, one superiorly, and two supero-laterally on the constricted neck. I smear the parts well with Extract belladonnæ, and give the animal ʒij of Gum opium suspended in hot water, and wait a few hours before attempting

removal. If the labour pains are very strong, I pass a strong cord round the body of the mother; through this cord I put a stout stick, which is used by an attendant standing by, to twitch and tighten the rope, thus preventing the abdominal muscles from strong and violent action until the opium takes effect. After making the incisions, it is a great mistake to proceed at once to deliver the cow; not only have patience, *but exercise it*. I generally find the Belladonna application, the opium, and the body twitch, with the exercised patience, to succeed without any cutting whatever.

Cæsarean Section.—In the mare I have twice attempted to save the offspring by sacrificing the life of the mother. Both foals lived—one twenty-four and the other thirty hours. In sheep, when the offspring are valuable, I frequently remove live lambs by this section, and with the greatest success, but always kill the mother. If there is one thing more than another that I have a decided antipathy to it is to act as accoucheur to a young sow; you never know when they are finished. I have seen them go on for seven or eight days, and do well. My son, the late John Fisher Thompson, was very fond of the Cæsarean section in young sows. In two instances, when he removed seven pigs from one and nine from another, the mothers lived for two days after the operation; but both cases had been four days in labour before he saw them. He always entertained the idea that if he had a good start that the operation would be successful. He also on two occasions removed calves from the sides of the mothers. The calves lived, but the mothers were killed, as one had Heart Disease and the other an abscess on the brain.

Of Torsion of the neck of the uterus I have had four cases:—First, a complete twist, when the animal was killed, and the other three were from half to three-quarters twist. In one cow—a blue-grey polled—when on her legs, the twist felt as if it was complete, but when cast, and on her right side, it appeared to be only half. I introduced my hand, and as the foetus was in its natural position, I seized both fore-legs, and told the attendants to turn the cow on to her left side. I then attached ropes to the pasterns and gave them to an assistant to apply steady traction, meanwhile introducing my hand as far as possible. I ordered the cow to be turned over again on to her right side, but when on her back, by my pressing to the right, the cow going to the left, and the assistants steadily pulling at the ropes, the uterus seemed suddenly to right itself, and the calf was extracted with the greatest ease, not only astonishing the parties present, but also myself. This case had been going on for three days, and was attended by an unqualified practitioner. Gentlemen, you can imagine my delight when I found the calf was alive. The other two cases were half-twists, and on securing the legs, pulling steadily, and jamming them into the half-twist, the animal suddenly dropped on to the side that the twist was from, and as suddenly the uterus righted, rendering delivery easy.

I have also seen two cases of retention of the foetus in cows. At the end of the gestation period, the pelvic ligaments became relaxed, vulvas freshened, udders distended, and teats stiffened and pointed—all seeming in full and natural condition for calving, but never any symptoms of labour pains. Finally, the ligaments tightened up, the udder shrunk and the animal commenced feeding. One was made fat and sent to the butcher; the other was turned out to grass, fell into a watering ditch, and was drowned. Strange to say, I saw these cows at various times for over twelve months, and at intervals removed from the rectum different bones belonging to the foetus; one side of the under jaw, scapula, ribs, humerus, and several others. These are interesting cases, and quite sufficient for a paper themselves.

In my district several flocks of well-bred sheep are kept, and my services are often required. In very frosty weather I frequently meet with eversion of the vagina, particularly the upper portion, with the os uteri constricted, and

the ewe very much pained. I smear the vagina all over with extract of belladonna, and return it. Then to keep it in position till the os dilates, I put two stitches of tape across the vulva, and give the sheep from 8 to 10 \mathfrak{z} linseed oil, and \mathfrak{z} ss. of Tinct. Opii. P.B. If the weather is mild they generally do well, but in severe frost they may end in inflammation and gangrene.

I will now relate the case which I read as a communication when a student, as I think it is still unique. It occurred in the practice of Mr. John Fisher, of Whitehaven, with whom I served an apprenticeship.

The case was that of a draught mare, and the foal a complicated monstrosity, with anchylosis of the articulations. The ears and poll of the foetus were presented at the os uteri, with the foal lying partly on the off side, both foreextremities extended right backwards along the belly, and the pasterns hooked behind the thighs. The hind legs pointed down and towards the pelvis, with the feet turned up, and the backs of fetlocks pressing against the os pubis of the mother. The knee could be reached, but the limbs would not stir, all the joints being rigid. The ears and poll, as I have said, were presented with the chin pressing against the lower portion of the neck. Numerous attempts were made to lift it into position, and finally the head was cut off with great difficulty, at the atlo-axoid articulation. A rope was then put round the neck as far down as possible, but the foetus would not stir. The shoulder was next cut off, and another strong cord put round it, when, by steady traction, the shoulder blade became detached. The cord was then put round the humerus, and three strong men had great difficulty in pulling the limb away, owing to the hooking of the pasterns round the thigh. The belly was next cut into, and the sternum removed by cutting through the cartilage on each side. All the thoracic and abdominal viscera were cleared out, and the knife was then passed between each rib, dividing the inter-costal muscles in their entire length, and each rib twisted off at the articulation, until nothing but the soft parts remained on one side. The hind feet were pressed into the chest and abdomen, close up to and along the spine of the foal, and powerful traction applied to the rope around the neck, when, for the first time, the foetus was felt to give way, and after a little patience its remains were extracted. The operation occupied four hours, Mr. Fisher being the chief operator. The instruments used were scalpel and prob-pointed bistoury. The mare was put to work in about ten days after.

In all cases of difficult parturition in the mare, I generally wait about six hours, and if by that time the afterbirth does not come away, I proceed to remove it. Then I wash the uterus well out with two or three gallons of tepid water, and after this has been expelled, I inject into the uterus two gallons of tepid water and one ounce of Tinct. Ferri Perchlor. I give the following draught:—

R. Ol Lini..	..	..	..	..	Oj.
Tinct. Opii..	..	..	..	..	\mathfrak{z} ij. equal to \mathfrak{z} ij. Opii Pulv.
Spir. Ammon. Arom.	..	..	..	..	\mathfrak{z} j. to \mathfrak{z} ij.
In fit. haust.					

And leave the mare.

I have noticed that in some seasons the retention of the placenta appears almost as an epidemic. If it is not removed within twelve hours after parturition it is usually followed by laminitis or pyæmia and death. Great care should be used in removing the placenta from a mare, the least portion left will cause a great amount of constitutional disturbance. Mares out at grass can retain the placenta a much longer time, without any bad effects than those in the stable—at least I have found it so. I remember one night being hastily summoned out of bed to go to a mare said to have “shot the

foal bed." I found the box full of people, and the mare lying very quiet and comfortable, and from her position I was satisfied that no eversion had taken place. I walked quietly up to her, and put my hand into the vulva and found all right. I then asked where the "foal bed" was. The owner replied that he had it in a large cream pot, among warm milk and water to keep it from getting cold. I had it fetched, and on putting my hand in brought to view a "foal bed" sure enough—a big cleansing, which I pitched on to the manure heap, telling the farmer that the mare could do without that till she got another like it.

I may also note a few serious accidents I have met with in parturition in the mare. I have several times seen the fore-foot of the foetus pressed through the top of the vagina, into the rectum, and out at the anus. If there in time, all haste must be exercised in pushing the foetus back, and putting the foot into its proper position. The wound thus made never heals up, as the parts are never at rest, because of the muscular action of the rectum. Some of the fæces pass out through the vulva. I have known mares breed with this defect, without any bad consequences. Again, the same accident is succeeded by more serious results, when, by the pains of the mother, the limb tears through the sphincter ani and perineum, making the anus and vulva into one. This, of course, never heals, and fæces and urine come from one common opening. In these cases I have seen immense sloughing of the neighbouring parts.

Eversion of the uterus is very common in the cow, and in many cases the organ is returned with difficulty; but in the mare it is extremely rare. As these are cases consequent to parturition, I will not enter into them.

About twenty-seven years ago, I met with a case of eversion of the bladder in a mare that had just foaled. She was standing, occasionally pained, with a constant dribble of urine from a yellowish blue bag hanging from the vulva, and which on examination proved to be the bladder, as the upper portion of the meatus could be felt. I returned it quite easily, but I had no sooner removed my hand than out it popped again. This was repeated several times, till, after returning it for about the fourth time, I rubbed a caustic pencil round the meatus. I then had her walked quickly about, occasionally dashing buckets of cold water on the vulva, and then gave her ʒij. gum opium in a draught. The bladder was retained and the mare did well. About two years ago, my assistant, W. F. Shore, came across a case in which he returned the bladder without any difficulty. In this case the mare not only delivered the foal and everted the bladder, but a loop of the bowel was pressed through the mesentery, causing strangulation. Of course the mare died.

Post-Partum Hæmorrhage.—In these cases I have a cotton bed-sheet put into a bucket of cold water, to which is added one or two ounces of Tinct. of Iron. The cloth is partly wrung out, and then I packed it into the vaginal canal, leaving it till it comes away by itself, in the same way as if the animal was cleaning, the animal meanwhile being kept quiet.

The discussion of Mr. Thompson's paper being deferred till a future occasion, votes of thanks were awarded to the essayists and to the President.

The members subsequently dined together, pleasantly ending a most interesting and instructive meeting.

R. RUTHERFORD, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

At the Monthly Meeting of the above Society on March 6th, Mr. DENT stated that Professor Brown had presented the following report:—

"*Pleuro-pneumonia.*—During the month of February forty-seven fresh outbreaks of this disease were reported in Great Britain. Of these, thirty-

one were in England, in the counties of Cumberland, Durham, Essex, Kent, Lancaster, Middlesex, Norfolk, Northumberland, Somerset, York (North and West Ridings). The sixteen reported in Scotland occurred in Edinburgh, Fife, Lanark, and Linlithgow; ten were in city and county Edinburgh. The number of cattle attacked was 118, and 750 others which had been exposed to infection were slaughtered healthy. In Ireland seventeen outbreaks were reported during the month in the North and South Dublin Unions; twenty-three cattle were attacked, and 159 healthy animals in contact were slaughtered.

"*Anthrax*.—There were twelve outbreaks of this affection reported in February, eleven of them in England and one in Scotland.

"*Swine Fever*.—In February 304 outbreaks of Swine Fever were reported. This is a decrease of twenty-four as compared with the preceding four weeks. There were 2,080 swine attacked; 991 diseased swine were killed, 906 died, 133 recovered, while 452 remained alive when the return was made up.

"Several important inquiries into outbreaks of disease among farm stock were conducted during the last month. These cases will be referred to in the Quarterly Report which will be laid before the Committee at their next meeting.

"It is necessary to announce that an Order of Council has been passed to come into force on the 1st of June, under which cattle and sheep from the Netherlands may be landed in Great Britain without being subject to slaughter or quarantine."

A letter had been read from Lord Cranbrook to His Royal Highness the Prince of Wales, dated the 8th February, acknowledging the receipt of a copy of the resolution passed by the Council at its last meeting with regard to Pleuro-pneumonia, and assuring His Royal Highness that the subject referred to would receive the consideration of the Department and the Government.

In accordance with instructions from the Council, the Secretary had communicated with the Highland and Agricultural Society of Scotland with regard to the appointment of delegates from that Society to attend a proposed joint deputation from the three National Societies to the Lord President on the subject of cross-Channel traffic in cattle; and a letter had been received from the Secretary of the Highland Society stating that he would bring the matter before his Directors on the 6th inst., in order that they might appoint representatives. A resolution on the subject had been also received from the North-West of Ireland Agricultural Society.

The Committee recommended the appointment of the following gentlemen as Provincial Veterinary Surgeons:—

Mr. William Aulton, of Derby, for Derbyshire.

Mr. Robert Gibbs, of Taunton, for South Somerset.

Mr. David Evans, of Haverfordwest, for Pembrokeshire.

Mr. William Hunting, of 16, Fulham-road, for the Metropolis and Middlesex.

Mr. JACOB WILSON asked, with regard to Pleuro-pneumonia in Ireland, if Professor Brown could inform them whether the disease was prevalent outside the Dublin Unions. A charge was being made against Irish cattle generally, that they introduced Pleuro-pneumonia into Great Britain, and it ought to be known whether this applied to the whole of Ireland, or to any particular part.

Professor BROWN replied that, according to the reports, the disease was entirely confined to the North and South Dublin Unions, and had no connection with any other part of Ireland.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this Association was held on February 22nd, at the Grand Hotel, Birmingham. Mr. Trigger presided, and there were present Professor Penberthy, of London; Drs. Barling, Foxwell, Manley, and Parker, Birmingham; Messrs. Wolstenholme, Manchester; Lodge, Dewsbury; Parker, Gamgee, Wilson, Price, Stanley, Birmingham; Barling, Ross; Owen, Rugby; Carless, Perrins, Worcester; Coe, Stoke; Pritchard, Beddard, Wolverhampton; Freer, Uppingham; Dawes, Collett, West Bromwich; Merrick, Northampton; Blakeway, Stourbridge; Blakeway, Birmingham; Olver, Tamworth; F. C. Golden, Martham; F. Taylor, Stourbridge; E. Wartnaby, Burton; G. Smith, Tunstall; H. Perrins, Worcester; Russell, Sandiacre; the Treasurer, F. Blakeway; and the Secretary, J. Malcolm.

The TREASURER read his annual report, which was as follows: Balance from 1888, £117 17s. 7d.; moneys received during last year, £35 8s. 5d.; money paid during last year, £17 17s. 4d.; balance in bank, £135 8s. 8d. He added that there seemed to be, year by year, an increasing negligence on the part of members with respect to the payment of their subscriptions. Taking into consideration the smallness of the sum, this was far from creditable, and it did away with any little bank interest which might accrue.

Mr. G. SMITH moved, and Mr. MEYRICK seconded, the adoption of the report. The motion was agreed to unanimously.

The PRESIDENT proposed as his successor Mr. Beddard, of Wolverhampton. He said that that gentleman had rendered excellent service as Hon. Secretary of the Association, and they could not consult their interests better than by electing him as their President.

Mr. COE seconded the resolution and it was adopted.

By the rules of the Association, Mr. Trigger becomes one of the Vice-Presidents. Mr. F. W. Barling and Mr. Meyrick, Jun., were unanimously elected as the other two. The Hon. Treasurer and the Hon. Secretary were re-elected. After some discussion, it was resolved that the Hon. Secretary should ascertain which gentlemen were eligible for election on the Council of the body corporate, and that a canvass of the members should be made by circular, with a view to the selection of the Midland Association's nominee.

The HON. SECRETARY read a letter from Mr. Hunting, acknowledging his election as an honorary associate. The letter was as follows:—

“16, Fulham-road, London, S.W.

“Dear Mr. Malcolm,—Please accept my best thanks for your letter informing me of the honour done me by the Midland Counties Veterinary Association, and please tell the members I am very grateful to them for their recognition of my poor endeavours to help forward the progress of our profession. Of course I cannot repay, by any means, an honour conferred by an Association, but I should only be too glad at any time to prove by action my thorough appreciation of their courtesy.

“Our Veterinary Medical Associations are vital parts of our profession now, and their influence directs the progress of the whole body. Such influence entails grave duties and responsibilities, which it is to be hoped we all recognise.

“Again thanking you for your highly valued honour,

“I am yours obediently,

“W. HUNTING.”

The PRESIDENT then introduced Professor Penberthy, assuring him of a hearty welcome.

Professor PENBERTHY, who was warmly applauded, then read a paper on—

SOME DISEASES COMMUNICABLE FROM ANIMALS TO MAN.

Some months ago your President did me the honour of inviting me to introduce a subject for discussion at this or a previous meeting. I then

mentioned "Some Laws pertaining to the Heredity of Disease." It must be obvious that, in the meantime, circumstances have transpired to attract special attention to this matter, and to cause an alteration in our intentions. Your President and Secretary then kindly named "Diseases Communicable from the Lower Animals to Man" as one which would be acceptable, and notwithstanding the fact that it had occupied so much of our thought of late, it affords me much pleasure to be allowed to initiate another discussion on it.

To discuss the whole subject in detail in the time at our disposal we do not presume, but I think its paramount importance to us as a profession, and to the community at large, furnishes an excuse for the devotion of a little more of our attention to its consideration. I may say at the outset that I am fully conscious of rendering myself liable to an accusation of temerity for undertaking the task, and ask your forbearance with incompleteness which must necessarily exist. To enter fully into the subject would entail the traverse of the whole region of comparative pathology. This brings us face to face with our subject, and our most important functions, as conservators of human life and health, and of the means wherewith these unspeakable benefits may be rendered available to the individual and to humanity at large. In proportion to the appreciation of our power to achieve in this direction must be our individual and collective professional credit, and those rewards which should accrue to the loftiest aims of which man is capable. We shall not be detracting from the importance of other branches of our work if we say that from our efforts in this direction we must especially anticipate the recognition of our true professional and social position.

In my humble opinion, we, as a profession, have been prone to regard disease and medicine in too restricted and limited a sense. We are too accustomed to imagine a possible division into classes named human and veterinary. Though there may be one flesh of beasts, and another of birds, and another of fishes, there is to my mind *but one* "*pathology*," one set of principles of medicine and surgery. The practice of these principles is certainly and properly divided, and rightly occupies the attention of two professions only in details of practice separate. The recognition of the universal application of the principles of pathology is calculated not only to simplify our studies, but to extend our usefulness and influence for good.

As the light of experimental research is being shed on the cause of disease, our ideas as to its after expression are becoming more defined, and our methods of dealing with these more intelligible, and easy, and effectual. It is interesting to remark what truth underlies the ancient axiom, "Remove the cause, and the effect will follow," and the advance of our knowledge in the direction of understanding "the cause."

When it is possible, and happily every year seems to increase the possibilities, the contagious disease must be studied with the natural history of its producing factor, and the power of this to induce morbid phenomena, as well as the facilities or resistance offered by the tissues of the organism to which it has gained access.

Modern investigation of the subject and our ordinary views of the principles of life and matter render it almost impossible for the trained mind to conceive of a disease being contagious in the usual sense unless its producing factor be a living entity or immediately associated with it. Its power of multiplication almost forces the conclusion. It is true that the exact nature of all diseases has not yet been satisfactorily demonstrated, but we must for a moment reflect, and consider what our positive knowledge on the subject was a quarter of a century since, and what absolutely fresh views we are now compelled to take. At no period of the world's history could it be said that science afforded no fresh fields. Our present position leads us to regard the theory of spontaneous generation of contagious disease as a most pernicious doctrine, one at discord with our evidence of natural law and order.

In those easily demonstrable conditions known as infective granulomata—Glanders, Tuberculosis, Actinomycosis, etc.—the relation of the cause to the local effect is perfectly clear. In other diseases, as Anthrax, etc., the mode of action may be sometimes different and not so easy of demonstration, but the association with the virus is quite as convincing.

To-day I ask your indulgence while I refer to some of what I regard as the more interesting points specially in connection with the *materies morbi*—the cause of those diseases in question—and to enlarge on those phases of its natural history which suggest special means of prevention or cure. We do not touch on conditions of which our special patients may be the mechanical means of conveyance from the diseased to the healthy.

It is natural that in contemplating this matter the question should arise why a virus should not exert the same influence in one animal or species as in another. Obviously the reply must be of a hypothetical character. The suitable soil and surrounding conditions, the selective affinity manifested throughout the vegetable and animal kingdoms, all lead us up to general laws. It has been suggested that in the insusceptible animal there is either deficiency of an essential or something additional which is antidotal or antagonistic. From the fact that bacilli which induce a certain disease will grow in broth made from tissues of an insusceptible animal, and then induce the disease in a susceptible animal, we are led to the inference that there is something of a vital nature in the insusceptible animal to account for the resistance. The general behaviour of white corpuscles towards bacteria has caused them to be regarded as in some way connected with this immunity. If watched in living tissues they are seen to be the natural warriors against such particulate matter.

Other circumstances may obtain and assist in the protective powers. Pasteur states that though fowls do not under ordinary circumstances contract Anthrax, if they be immersed in cold water so as to reduce the temperature to the mammalian standard they become affected and die.

Though from time immemorial it has been the custom to regard some diseases of animals as transmissible to man, little but vague speculation was associated with it until recent years. The disposition at the present day is to add to the list of such conditions. I fear sometimes enthusiasts are carried beyond the region of observed facts and discretion. Precipitation and generalities are to be as far as possible avoided, but we must not forget that it is even safer to err on this than on the other side, though I cannot refrain from saying that on our own part the greatest caution should be used in making statements or receiving them. The capacity for being duped in this direction is not small. I think that until a matter as to intercommunicability is safely and soundly established it should be discussed only amongst professional or scientific men, for first impressions are not readily erased from the lay mind. This state of caution need not deter us from using every means at our disposal for the discovery or substantiation of such conditions as may possibly exist. During the existence of epizootics and epidemics it is our duty to watch for evidence of connection, and of course it is most desirable that the practitioners of both branches of medicine should be in accord.

In these considerations we must not forget that the contagious and intercommunicable disease does not always manifest itself in the same way in all susceptible species. The Rabies poison may induce Paralysis in rabbits, Hydrophobia in man; Splenic Apoplexy, malignant pustule in man; malignant Small-pox of man, a benign condition in the cow.

The more important and practical points demanding our attention appear to me to be the recognition of the disease in its earliest phases, the manner in which it may be propagated or disseminated whether by mediate or immediate contagion, the period during which an affected animal may be

capable of spreading the disease, and the length of time during which the virus outside of the body retains the power of exciting the disease; as well as any circumstances which modify any of these conditions.

Speaking of these diseases separately, Anthrax (*Charbon*) is perhaps the best understood of those with which we propose to deal. Its cause is inseparable from the organism known as the *Bacillus anthracis*. This bacillus, itself very delicate and easily destroyed, rapidly multiplies under favourable conditions, forming spores which are much more tenacious of life. These spores resist the action of heat and cold, comparatively strong disinfectants, and live for long periods outside the body, putrefaction having little effect on them. For the development of spores and bacilli free access of air is essential, but while putrefaction destroys the bacilli, the spores remain, without oxygen, alive though dormant.

In an affected animal bacilli may exist only in very small numbers within a short time prior to death; *in articulo mortis* and after, with access of air, they develop rapidly. They are most generally met with in the blood, but the discharge from eyes, nostrils, etc., also usually contains them.

In Great Britain Anthrax is most frequently recognised in the ox in the form known as Splenic Apoplexy or Fever; other ruminants (sheep, etc.), the horse, ass, pig, rabbit, and least in carnivora, are all affected. It is very, though not absolutely, fatal. Its attack is sudden, period of incubation very short (from twenty-four hours to three days), and its after course in fatal cases rarely protracted beyond two days.

A heightened temperature is the earliest sign, but *post-mortem* examination is what we usually have first to deal with. The discovery of the *Bacillus anthracis* is necessary before we can positively state (of any condition) that it is Anthrax.

There is ample evidence of its being communicable to man, on whom it manifests itself in three forms, which seem to have distinctive features, important for us to remember.

Malignant pustule, or *Charbon*, in which bacilli are usually found only in the local lesion. If active treatment is not early adopted the blood stream and other parts contain them in greater or smaller numbers. Excision of the local lesion and cauterisation often prevent the spread, and Guy's Hospital Reports give forty-eight cases treated, and thirty-nine recovered. Malignant pustule is probably produced by inoculation (and at the seat) with bacilli, and is consequently the form most likely to follow manipulation of carcasses or parts of animals recently dead. This is compatible with general experience and laboratory experiment.

Intestinal Anthrax, in which the mucous membranes of stomach and intestines manifest the local lesion; the mucous and sub-mucous tissue is largely infiltrated with a gelatine form exudate; softened and enlarged spleen and mesenteric glands. The infection is usually general, and the effect usually fatal.

Pulmonary Anthrax, or wool-sorter's disease, in which the pharynx is congested, the bronchial mucus tinged with blood and of a musty colour, bronchial glands infiltrated and softened, lungs in varied morbid states, ecchymoses in various parts of the body. This is also a fatal form, but if the patient do not succumb in a few days recovery is usual.

In Intestinal and Pulmonary Anthrax the general infection appears to be associated in the one case with ingestion of spores, in the other with the inhalation of spores. This is supported by the fact that the intestinal form is met with after the consumption of improperly cooked or uncooked flesh from affected animals, and the latter—pulmonary—among workers with certain classes of wool which has been subjected to conditions favourable to the development of spores and their being inhaled, those who open bags of

wool imported from countries where Anthrax is known to prevail, and those in drying-rooms where spores are likely to be mixed with the atmosphere.

It is not, then, peculiar that we meet with malignant pustule in workers with hides, slaughterers, and veterinary surgeons, and that Guy's Hospital, around which are situated our large hide-dressing establishments, should furnish so many instances of it; nor that wool-sorters' disease should have a kind of natural connection with Bradford, though it is by no means confined to that city.

Intestinal Anthrax is comparatively little recognised, and indeed during life, independent of the history, most difficult of recognition. I am inclined to think it may be more common than we believe. Cooking of food is of course a potent factor in lessening the risk in the human subject.

With the curative treatment of our patients the recent orders attached to the Contagious Diseases (Animals) Act forbid our dealing. My experience tells me that it is not an absolutely fatal condition. When external Anthrax is localised excision, cauterisation, and the internal administration of such agents as quinine, perchloride of mercury, etc., are sometimes attended with recovery.

The preventive measures will be based on our knowledge of the facilities afforded by the animal and vegetable pabulum, the free access of air to the development of spores, their great powers of resistance, and the different means by which they may gain entrance to the body. Though bacilli soon succumb to conditions of putrefaction, the spores seem to defy ordinary agencies of destruction for unmeasured periods. The channels of distribution are as numerous as mechanical means of conveyance and quite beyond enumeration. Carcases should be disposed of immediately with unbroken hide to prevent the formation of spores, and with due regard to the virulence of the excretions and secretions. Burning, if practicable, would be best. If burying is to be the mode of disposal a spot below the level of the springs and water-courses should, if possible, be chosen. If practicable, too, it is well to bury them where they died. Excretions which have had free access of air should be submitted to the action of fire or some other powerful disinfectant, H_2SO_2 being about the best.

Bleeding cannot, of course, be too strongly condemned, from this and every point of view.

Glanders.—Though for a long period recognised as *the* disease communicable from the horse to man, it has remained for recent research to make the most important additions to its pathology. A very short organism (*Bacillus mallei*), about the size of that of Tubercle, and in some other respects like it, has been discovered, and pure cultivations produce most virulent and characteristic Glanders.

It appears beyond doubt that this bacillus is the disease-producing agent. It is more commonly found in young than in old lesions, grows in serum in droplets, and on potato in a characteristic fashion. Experiment tells us, too, that though we most frequently meet with Glanders in the horse and ass, and though more fatal to these, that many other animals are susceptible. We have recently met with cases in lions, cats, dogs, and guinea-pigs. The latter, especially the old, seem to recover in many cases. I am disposed to believe that in other animals than the horse Glanders exists more commonly than we have supposed. When we consider the source of food supply of our domesticated and captured carnivora in large towns, this view receives support. Virulent matter inoculated into guinea-pigs in the course of three or four days produces *in loco* an ulcer similar to that observed in the Schneiderian membrane of the horse, swelling of the lymphatic glands connected with the lesion, infarctions, and characteristic nodules in various parts of the body, particularly lungs, spleen, ovaries, and gut. The smaller the amount of virus

injected the greater is the tendency to the chronic forms. The shortest period of inoculation I have been able to register is in the instance of an ass, when after inoculation with a cultivation of the bacillus the temperature was 105 in twenty-four hours, and in three days characteristic changes were going on in the Schneiderian membrane.

I am not aware of any direct experiment bearing on the length of time during which the virus of Glanders outside the body under ordinary conditions retains its power of producing disease, but some circumstances point to this as being considerable. In the horse probably the commonest mode of infection is through the respiratory membranes, though entrance through abraded surface is not rare. I have seen two cases of infection of the intestines.

In the human subject, in which the disease is known as Equinia, Malleus, Maliasmus, etc., the entrance of the virus is perhaps most commonly through a wound. In him we find the acute and chronic forms, the former very fatal; Bollinger states that only one out of thirty-eight authenticated cases recovered; of chronic cases seventeen were fatal out of thirty-four. Fagge says that the human subject is not very susceptible; I presume he refers to contraction through the respiratory membrane.

In the acute form papules, soon running into vesicles sometimes as large as a sixpence, form and are connected with Farcy-like swellings, and ulceration follows; the glands are comparatively rarely affected; nasal discharge may or may not exist.

Inoculation in the ass is usually followed by a short period of incubation and death in from nine to twenty-five days.

Our prophylactic measures cannot be separated from the existence of a living particulate organism which we cannot conceive as arising spontaneously. This is capable of propagating Glanders, probably by the normal mucous membranes of the air passages and intestinal canal, and certainly by abraded surfaces. Our chief, though not exclusive concern appears to be with those connected with horses, as stablemen and their families, living in and about stables. The ease with which dogs and cats may be affected should always be borne in mind.

The measure instigated by most philanthropic and so far praiseworthy sentiments I cannot allow to pass without remark; I refer to our open water-troughs, which in my opinion are the most common and facile channels of communication of Glanders to horses, and through them to man. Only yesterday week two cases of Glanders, with ulceration of the Schneiderian membrane and copious nasal discharge, were brought for my inspection at our "gratuitous practice," both of which had drunk at the troughs on their way to the College. These suggest their own remedy.

Rabies and Hydrophobia.—The susceptibility of the human subject to Hydrophobia after inoculation of the rabific virus has been long known. The exact nature of the virus has not yet been satisfactorily determined. Rabies is said to manifest itself in two forms—the dumb and ferocious. In all cases it would appear that the brain and spinal cord are more potent in producing the disease; that in those situations the virus is most plentiful or active. It also exists to a lesser degree in the secretions and other parts of the body. Probably after the death of the rabid animal under ordinary circumstances the virus outside the body does not retain its vitality very long. After entering the body of a susceptible animal, it manifests its activity at various periods. Its period of incubation is probably very extensive—sometimes, it is said, four or five years—and we know that symptoms often manifest themselves in ten to fourteen days.

Subdural injection is by far the most certain way of producing it. The time which elapses between the inception of the virus and the manifestation of the earliest symptoms would seem to be some standard or criterion as to

the virulence or mortality of Rabies, though this is not a fixed rule. The shorter the period of incubation the more rapidly fatal the result.

Rabies virus passed through a series of rabbits gains virulence up to a certain number of transmissions; passed through monkeys its virulence is much lessened and period of incubation increased. Rabies is most often met with in the dog, and next in order in the cat, wolf, horse, deer, ox, sheep, rabbits, etc. In ninety-nine out of one hundred inoculated rabbits the paralytic form is to be observed.

In the human subject the symptoms are usually of a paroxysmal character, with dread of water and inability to swallow, etc.

Men are usually inoculated by being bitten by rabid animals. They are not so susceptible as the dog. We have no record of transference of Rabies from man to man. Pasteur has adopted and very largely carried out a practice of protective inoculation by which he believes that he affords extensive protection, and that it is effectual even during some time after the period of incubation. All who have made a careful study of M. Pasteur's work seem to agree up to a certain point with his statement; the matter is, however,*still *sub judice*. If it be found effectual and practical one might suppose that all puppies should be thus protected.

Short of this, I think muzzling for, we will say, twelve months, and the perpetual quarantine by muzzling for twelve or eighteen months of all dogs imported into this country. Dr. Drysdale, writing in yesterday's *Morning Post*, refers to the decrease of Rabies during the period of muzzling in London, and its increase since the withdrawal of the order.

Tuberculosis, a condition so widespread among men and animals, is to us a matter of the highest importance, but inasmuch as it was lucidly dealt with at your last meeting by our friend Mr. Olver, I will touch but very briefly on it. In one or other of its forms Tuberculosis is most often recognised by us in the ox. Statistics indicate that the order of occurrence is as follows: man, milch cows, fowls, rodents, pigs, goats, sheep, horses, and carnivora; also that females and the young are more commonly affected than males and adults.

Heredity.—Starvation, bad ventilation, prolonged lactation, and other exhausting conditions appear to predispose to the disease; but Koch's fruitful discovery has decided that the active agent is the *Bacillus tuberculosis*. This is an extremely small organism, about one-third diameter of a red blood corpuscle, motionless, slow of growth, persistently retaining stains, and if cultivations of it are introduced to the susceptible animal Tuberculosis results. Growth and development appear not to occur except between temperatures of 86 and 105°. But this by no means allows of the inference that the bacilli or spores *die* or become incompetent below or above these degrees. Kept at 107° F. for several weeks, the virus dies. It is said that *Bacillus tuberculosis* desiccated for months, and then moistened and introduced into the animal body, has produced Tubercle. M. Cornet, in the *Revue Scientifique*, says that by sponging dust from walls of a compartment in which tuberculous patients have been located, and then washing and reproducing in sterilised broth, active tubercle bacilli have been found. He also induced Tuberculosis in animals by inoculation with the placenta of tuberculous females and semen from testicles of males. The bacillus is said to have been found in ovaries and spermatozoa, and well-marked Tuberculosis in a seven months' calf in utero, and Tuberculosis seems to be much more easily and rapidly induced by entrances through natural passages than by introducing into the subcutaneous tissue.

There would seem little doubt that the Tuberculosis of the lower animal is communicable to the human subject; indeed, that these are only manifestations of the same virus. Minor points of difference between the bacilli and the

lesion perhaps exist, but the tissues of various animals may, we think, to some extent modify the result. The bovine bacilli are said to be smaller, finer, more certain of inducing the disease in rabbits, and producing more rapidly general lesions in the guinea-pig. They are also said to be more common in the fresh lesion in the human subject, and in the causeating in the ox. Dr. Crighton would appear to try to show that man is the subject of two distinct forms of disease, one proper to himself, the other proper to bovines, but he has by no means made it clear. Though direct and positive evidence may perhaps be wanting to warrant us in calling the Tuberculosis in man and oxen identical, there seems some room for doubt that such is the case. It is obvious that direct experiment, *i.e.*, the inoculation of the human subject, is not in the present state of our social laws possible. Apparent proof from converse experiment is not wanting, for Tuberculosis has been again and again induced in the lower animals by introducing human tubercle bacilli, and much collateral evidence of the intercommunicability exists. Milk is a favourable medium for both development and conveyance of the virus. Dr. Sims Woodhead and others have observed that Tuberculosis in young children is most often confined to the mesenteric glands, and that in the lower part of the small intestines the course of invasion could be traced along the line of lymphatics usual to absorption, and when Tubercular Meningitis has existed lesions in mesenteric glands and abdomen appear older than others in the body. The bacillus is not evenly distributed through the system of the affected animal; it is probably only found in large numbers in and about the specific lesions. In oxen the lungs and pleura are more commonly affected; in the pig and sheep, the glands of neck; fowls, mouth, nose, spleen, intestines, and liver; rodents, spleen, liver, and lungs; horse, glands, spleen, (in form of so-called Lymphadenoma); man, lungs, glands, joints, nervous system. Muscles in all animals rarely affected. The secretions sometimes contain bacilli. When the udder is the subject of Tubercle the milk may contain them in greater or lesser numbers. They are not always, indeed but rarely, found in milk of animals whose udders are not tuberculous. Experiment appears to prove that Tuberculosis may result from inhalation, ingestion, and submucous and subcutaneous inoculation, also by injection into the serous cavities.

The power retained by the bacillus after remaining on walls, etc., and communication by inhalation, suggest isolation and thorough disinfection.

The existence of bacilli in milk, and the ease of destroying them by heat, tell us that boiling milk for a short time and the thorough cooking of meat are likely to obviate the production by these media.

To legislative and preventive measures there seem to be almost insuperable barriers, owing to its general distribution, insidious attack, and consequent difficulty of detection in early stages, while the fact of high-priced animals being so generally affected is of great importance in obtaining ways and means. I fear no practical measure can be thorough.

Variola, Vaccinia, Cow-pox.—Though Cow-pox in no form may be deemed a fatal disease, it is the source of considerable annoyance and loss. Its chief interest, however, accrues to the part it has played in the measures adopted to prevent Small-pox in this country.

Probably the majority of thinkers hold to the view that cow-pox is identical with small-pox, simply modified by passage through the cow. Jenner, Ceely, and Simmond's works on this subject are historical. Ceely states that by inoculation with Small-pox matter he produced lesions in the cow identical with those of Cow-pox. When lymph from these was transferred to the human subject Vaccinia resulted.

Counter experiments of Chauveau failed to produce Vaccinia with human Small-pox lymph; and though other pathologists, notably Dr. Voigt, have

given reports of experiments which *prima facie* support Ceely's, we cannot say that we are yet in a position of certainty.

It does, however, from experiments and ordinary observation, appear beyond doubt that Cow-pox is communicable to the human subject, inducing Vaccinia in him, and also protecting him to a smaller or greater degree from severe attacks of Small-pox.

It has been regarded of common occurrence and well known to the profession; certainly by that name we have always recognised a disease which modern *pathologists* have flavoured and dished up as though it were some rare or unknown luxury. It would appear to have an abiding influence in certain parts of England, notably Wiltshire, Gloucestershire, Somerset, etc., where Jenner first studied the diseases, and certain most interesting, and so far instructive, investigations have been lately carried out by Professor Crookshank, of King's College. As I was privileged to see some of the cases and result of inoculation, and as it is possible that some of us may not have met with it, I may be allowed to give a brief description of the condition.

Jenner says that an attack of Cow-pox does not give immunity from Cow-pox, but Crookshank says it does for a time at least. The exact nature of the virus has not been determined, and though both by Jenner and Ceely it has been vaguely associated with Grease in horses, I find no substantial evidence to support this view.

Amongst cattle this naturally contracted disease is almost exclusively confined to milch cows, though, as we all know, it is readily produced artificially in calves.

Unless we carefully watch an outbreak we shall not have an opportunity of observing the early stages; it is usual that our attention is drawn to the crusts.

The first symptom is often slight pain on being milked, then a feeling as of hard patches about the teat—papulation. In the course of three or four days these become vesicles, varying in size and shape from that of a pin's head to that of a shilling. The vesicle assumes a peculiar umbilicated form, most of them having a *marked* central depression and indurated edges. In further three or four days they are mature, and usually surrounded by a distinct and almost characteristic areola. This stage at different periods (sometimes determined by the amount of interference with the teats in milking) runs into that of the crust, which is dark brown or even black, occasionally very large by confluence of lesions. Where rough usage in milking has obtained we may find considerable ulcers. Throughout this stage the teat is usually red and swollen. It spreads through a dairy with a regularity that suggests the transference of the contagion by the hand of the milker. The latter phases of the lesion might cause it to be confounded with ordinary chapped teats, but its course will be sufficient to differentiate.

Jenner indicates a white-pock, blister-pock, or white vesicle, transferable to man by contact, as liable to be mistaken. Ceely and Herny insist on this being merely a slight effusion and raising the epidermis, without central depression or cellular infiltration, of a transient nature, and not giving rise to systemic disturbance.

This disease is usually communicated to the milkers, in whom, after a period of about three days, we have evidence of Vaccinia, which runs through a course similar to the lesion of protective vaccination.

Though not commonly, men having previously suffered from Small-pox or Vaccinia may contract the disease. One attack secures immunity only for indefinite periods; we should expect this from the frequent taking of the second vaccination in man.

Scarlatina.—Diseases of the cows' teats have recently acquired a special

interest, as they have been, by the medical officers of the Local Government Board and Dr. Klein, most intimately associated with the production of scarlatina. That milk is probably a most favourable medium for the development of low organisms, as bacteria, or mechanical means for the *dissemination* of the virus of disease, cannot be questioned; but notwithstanding all that has been said, I do not think we are yet in a position to say that a certain disease of cows' teats associated with a scaly condition of the skin is identical with human Scarlatina. The discussion of this matter must be so fresh in your memory that I need scarcely dwell on it. Dr. Klein describes the condition—ulceration, covered with scabs in the teats and udder; ulceration, scab, scurfiness, and loss of hair in patches in different parts of the skin.

The animals were thin, and showed slight cough, but no rise of temperature. Dr. Klein isolated a round bacterium, a streptococcus, which inoculated into calves produced sometimes cutaneous visceral disease which very much resembled that of the Hendon cows.

This description, published in June, 1887, is not very conclusive, and up to this date little has been reported which substantiates the position taken by Dr. Klein. Notwithstanding, it will be clear to us that it should have our consideration when dealing with disease of cows' teats.

Actinomyces.—Probably no condition has received more elucidation from recent research than that now known to depend on the ray-fungus actinomyces. From the earliest records of veterinary medicine, certain diseased states have been recognised and variously named which we now include under the term Actinomyces. They usually occur as indurations, enlargements, or ulcerations in some parts of the body, and are produced by the irritation of the actinomyces. This is a fungus which seems to be made up centrally of dense tissue, sometimes composed of threads, from which radiate very closely packed filaments of a club shape, having their broadest extremities pointing to the periphery, where they may be branched or not. It thus gives a star-like or radiating appearance to the fungus, which is named accordingly. This fungus gaining the tissues, probably most frequently through an abrasion, sets up irritation, and we have around it a zone of inflammatory product which shows some tendency to vibrate. Microscopically, the lesion is not very unlike that of a tubercle, but its nature is settled by the presence of the fungus. The core may calcify, or break down and suppurate. The actinomyces may be extracted from the lesion, cultivated, and inoculated into healthy animals produces the disease. Though it has been met with in the sheep, goat, and horse, the ox appears to be the most commonly affected amongst our patients. The reason for this is not yet clearly explained. The disease is most frequently recognised in the tongue of the ox under various appellations, as scirrhus tongue, wooden tongue, etc., and is quite familiar to all of us; in growths about the face known as Osteo-sarcoma of the jaw, pharyngeal tumours, Spina Ventosa, Bone Canker, Bone Tubercle, etc.; and under the skin as wens, clyers, etc.; and in some instances have been found the fungus in question apparently standing in relation to the growths as cause to effect. Inferences from these observations have, I am inclined to think, been too inclusive. It seems hardly fair to presume that because in a few instances the actinomyces have been found in these enlargements, every condition which has been described under the terms in veterinary literature is due to the actinomyces. Undoubtedly the disease is more common than it was generally supposed.

Actinomyces has been found affecting mucous membranes of mouth and alimentary tract, which was considerably ulcerated. The condition known as Tubercular Stomatitis is probably associated with it. Another very important location is the lungs; here the fungus produces a lesion which is quite likely to convey to the casual observer the idea of Tuberculosis. The lesion is

about the same size and in the same situation. It is, however, more often purulent, and if the pus be squeezed out, small, firm, grease-like matter may be distinguished in it, and if these be examined microscopically the fungus may be found. Actinomycosis has also been recognised as a disease of the human subject. It is in him more often associated with extensive supuration. The fungus has been found in abscesses in the pharynx, peritonæum, stomach, intestines, liver, pleura, lungs, jaw, etc. The inference is that it may gain entrance by inoculation, ingestion, and inhalation.

Between the fungus found in the human and bovine lesion there has been supposed to exist some structural difference, but the disparity seems to decrease as our means of research develop, until now I think I may say that any divergence may be accounted for by variety of soil.

Quite recently Professor Crookshank, who has done admirable work in this direction, has with the actinomyces from a human patient infected a calf, and demonstrated in the calf actinomyces almost indistinguishable from that of which it is the host by natural selection. I am indebted to him for two slides now before you. These are the most reasonable grounds for the belief in the communicability of Actinomycosis of cattle, a disease whose importance from an economic point of view is considerable to man, in whom the disease is most serious.

The fungus does not appear capable of resisting the action of powerful disinfectants, and when near the surface of organs these agents are often effectual in destroying it and arresting the disease. When practical, of course excision should be resorted to.

Foot-and-mouth Disease.—Many observers regard this as communicable to man. Klein says it is due to a streptococcus which he has isolated.

Evidence of transmission to man is of a general rather than of a special character. It is said to induce in him by direct contact a mild eruptive disease of a vesicular character, affecting lips, and tongue, and fingers. In a somewhat extensive experience, I have not been able to witness a case. The situation of course invites us to be on the watch, and hope we may have the result of your experience in the matter.

Diphtheria.—Many attempts have been made to connect Diphtheria with diseases of the lower animals, one recent writer fitting Strangles with its production. I do not think that we are yet warranted in accepting any evidence as conclusive, but some general statements and more careful observation suggest a connection with our special patients. The recent announcement of the discovery of the organism giving rise to Diphtheria may, I hope, be correct, and if so our chances of discovering any connection which may exist between it and conditions of the lower animals will be much enhanced.

There are several parasitic diseases of the lower animals communicable to man, but time forbids even mention of them.

The reader drew attention to the necessity for the scientific inspection and control of abattoirs, mixed sanitary boards, and the study and discussion of matters pertaining to the communicability by both branches of the medical practitioners.

The address was attentively followed, and was applauded at its close.

The PRESIDENT complimented Professor Penberthy on the marvellous way in which he had condensed the subject. He had said enough to show that, time permitting, a day would not be enough in which to discuss the gigantic topic he had brought before the Association. He was bound to say, however, that he had been staggered by the Professor's remarks as to the burial and exhumation of animals suffering from Anthrax. He had understood that outbreaks were sometimes traced to the fact of animals having grazed over ground in which the carcasses of animals dead of Anthrax had been buried. He remembered seeing the accounts of such a case in Leicestershire. It was

worthy of remark that under the Contagious Diseases Acts animals might often have been destroyed for Splenic Apoplexy when they were only suffering from Black-quarter. As to Anthrax in pigs, he had last summer been called to some pigs which seemed to be suffering from malignant sore throats, which he took to be anthracoid. He asked, "What have you had dead in the place?" and was told that a calf had been "struck." Pigs, and dogs also, would eat "struck" calves with impunity, yet in this case there was a distinct outbreak of the disease, emphasised by the fact that pigs which had had no access to the food were free from Anthrax. Professor Penberthy had thrown a great deal of light on Glanders. If he found a cat suffering from Glanders he would not give it an opportunity of recovering. Apparent cases of recovery in horses had often been seen to be no recoveries at all. As to Rabies, he had harped on that subject in season and out of season. Nothing could be more simple than to stamp it out. It was absurd to talk of the "cruelty" of the process. A town councillor in the Midlands was reported to have said that the way to drive a dog mad was to muzzle him. If such gentlemen could produce the virus by putting on a muzzle they had something new to learn. A dog might be taught to wear a muzzle as a young horse wore a halter, and if the life of a single human being could be saved the little inconvenience suffered by dogs would be more than justified. What had been said as to Tuberculosis showed the vital importance of never breeding from a family in which there was the slightest trace of the disease. He had never seen a case of Foot-and-mouth Disease in a human being, and he had even drunk with impunity the milk of an animal affected with it.

Mr. LODGE (Dewsbury) said that, on the contrary, he had seen such cases developed in farm servants. Would the Professor say what form Glanders took in the dog, and how the boy who had been affected with Cowpox caught the disease.

Professor PENBERTHY: He was inoculated.

Mr. LODGE: I was rather inclined to think that the pictures looked like Scrofula more than anything else.

Professor PENBERTHY: Oh, no. The boy was quite happy five weeks afterwards.

Dr. BARLING said that he thought some of the most interesting work in existence was done in connection with diseases capable of transmission from animals to man, and *vice versa*. The advantage of hearing papers like that to which they had listened was that one became familiar with the life-history of the virus—a most essential thing. There were two difficulties they had to contend with: that of people who accepted micro-organisms as the causes of disease, and having open minds, talked very loosely about things which deserved precision; and that of those others who would believe nothing, and would not take the trouble to investigate. As to Rabies, he would have had no difficulty in saying, had Professor Penberthy refrained from doing so, that they might accept the Pasteurian method as an almost absolute protection. His authority was Mr. Victor Horsley, who, in a paper read lately before the Epidemiological Society, gave statistics, compiled by himself, to show that of people who were bitten by dogs which had died of Rabies 15 per cent. succumbed if left to the ordinary treatment; while if they were treated by the Pasteurian method only 1·3 per cent. died. He would be glad to hear whether the Professor accepted those statistics. With regard to the extermination, he had the fullest confidence in the efficacy of the preventive measures which had been recommended. As to other diseases which had been treated of, it seemed to him that what was wanted at present was an agitation for greater powers to deal with affected animals, and more especially with tubercular animals. He did not suppose for a moment that they would stamp out Tuberculosis, but they might diminish the amount of it,

and render safer the consumption of food and milk. In a town like Birmingham there were probably thousands of children brought up on uncooked milk, and one tubercular cow was capable of affecting hundreds of children. Of course, if the udder was not affected his own impression was that the milk was free from the disease. Doctors relied, too, upon raw meat juice as very efficacious in illness, but if it was taken from tubercular animals it would be a very ready source of danger. He would like to be informed whether when an animal was affected in the mesentery the blood and tissues generally were also affected.

Mr. OLVER thought that it was well worth while to assign another meeting for the discussion. He was particularly grateful for Professor Penberthy's suggestion of a possible Anthrax of the bowels. He had seen some marked cases of the transmission of Foot-and-mouth Disease to the human subject; at least he so diagnosed them, and the medical men of the neighbourhood agreed with him. As to Tuberculosis, and the condition of the udder, who was to decide when the inceptive stage began? It was much to be regretted that dairies were not subject to inspection by experts, but only by policemen. What had been said on the subject of Rabies reminded him that he had heard of cases treated on the Pasteur system, in which the dogs recovered and the persons so treated died.

Mr. WOLSTENHOLME (Manchester) felt it his duty to accentuate the feeling of veterinary surgeons, that they ought to be the recognised authorities in matters of inspection. There was a disease which had been omitted from Professor Penberthy's list, and which was almost claimed to be communicable. He referred to the analogy between so-called Parturient Apoplexy in cows and Parturient Fever in human beings. In Manchester, they would be interested to learn, a discussion had been arranged for between veterinary surgeons and general surgeons on that subject; and he wished to invite all gentlemen who were present, and who had any special knowledge of Parturient Apoplexy in the cow, to be present. He was told that in the breed of Herefords it was almost unknown. As a Manchester man, concerned for the high death-rate in that city, he was much impressed with the importance of checking the food supply properly. The French Government had an excellent law as to tubercular animals.

Mr. WARTNABY testified as to the contagious character of *Eczema Epizoötica*. A farm labourer once showed him an affection of the finger-nails which appeared to be Eczema, and which he said he had caught from milking cows when they were suffering from that contagious disease.

Professor PENBERTHY, in replying, said that there was a good deal of difference between a bacillus and a spore. The bacillus, a long rod, was got rid of easily. The spore was not got rid of in ten or twelve years. But spores did not exist in the blood, and only formed afterwards, when there was free access of oxygen; so that if animals could be buried at once, before putrefaction set in, they were inert for mischief. He did not want them to take his advice about distributing the carcasses after exhumation, but if the whole process could be carried out perfectly there would be no danger in it. He could endorse what had been said about Anthrax and Black-quarter. In every case in which he had been called in as a consulting surgeon the latter had been mistaken for the former. But extreme care, without a microscopical examination, would, in the majority of cases, enable an expert to distinguish between the two. The Anthrax bacillus was not gasogenous; the other was a regular gas-producing agent. In Anthrax there was rarely any extensive local lesion, but in cutting down through a muscle of Black-quarter the condition one found needed no describing. The case of pigs affected with "anthracoid sore throat" was rather interesting, but he must be permitted to say that the term "anthracoid" was the most confusing word ever devised. Either there

was Anthrax or there was not. The case was interesting because Anthrax, so far as he knew, could not be produced in the pig experimentally and at will. Four years ago Pasteur gave him some of his strongest Anthrax material, and he began injecting into a pig enough to kill half a dozen oxen, but it had no effect beyond that of raising the temperature to 105 or 106°. But feeding with an abraded mouth produced the so-called anthracoid sore throat, which was really malignant Œdema in conjunction with Anthrax. Two or three years ago there was a fuss made about pigs in Cheshire. It was absolutely denied that pigs could have Anthrax, but Toussaint's discoveries in France upset that opinion. As to Rabies, as far as the experimental conditions went, he absolutely agreed with Pasteur. He was the only Britisher who had ever worked in Pasteur's laboratory, and he knew that everything Pasteur put in print was written without bias. The people who wrote about him in the *Morning Post* and the *Standard* had no right to speak of him. He was in an atmosphere which they could not breathe. They should be simply obliged for the good he had done to humanity in a variety of ways. There was not the slightest doubt that the twenty-three dogs which were inoculated protectively did not take Rabies, while the twenty-three unprotected ones put beside them did; or that Horsley's experiments, and the experiments of the Commission formed of Horsley, Sanderson, Sir Henry Roscoe, Sir James Paget, and Dr. Fleming, were trustworthy, and did achieve results which in substance agreed with the other results. Two members of the Commission fought it out tooth and nail until they were compelled to sign the report. Experience told us, however, that the matter was still *sub judice*. That people had been killed by Pasteur's inoculation there was very little doubt, and that other people had died who should not have done was very likely. The agitation in favour of legislation as to Tuberculosis was in good hands. Diplomacy and politics, not the necessity of preventing disease, would, however, determine the question of time. If the prevention of Tuberculosis would enable either party to hold office a little longer, Tuberculosis would be prevented; if not, Tuberculosis wouldn't. (Laughter and Hear, hear.) Moreover, the profession was rapidly gaining influence with the higher grades of the public, and so he bade them be of hope. In reply to one gentleman, he had to say that, so far as he knew, Tuberculosis was not found in the muscles, but in the lesion. He had never found the tubercle bacillus in the milk of even markedly tuberculous animals, except when the mammary gland was affected. As to the need for qualified inspectors for abattoirs, dairies, shippens, etc., in connection with medical and sanitary boards, it came home to them that they must make themselves fit to hold the position of such inspectors. The demand for them would be heard soon enough. They were appreciated fairly at their own value.

Mr. PARKER moved a vote of thanks to Professor Penberthy for his admirable lecture, and the motion was seconded and cordially agreed to.

Mr. BEDDARD proposed that the next meeting of the Association be held at Wolverhampton, where he assured the members of a hearty welcome.

Mr. MERRICK seconded the motion, and it was carried.

The officers returned thanks for their election, and the meeting then terminated.

Army Veterinary Department.

Gazette, March 15th.

Veterinary Surgeon J. T. Dibben to be Veterinary Surgeon, First Class, ranking with Captain.

There has been a severe outbreak of Surra among the horses, mules, and ponies in the Mecktila district, Upper Burma. The 1st Madras Lancers was

very severely attacked, and of 87 horses affected 76 died. Altogether 162 animals suffered, of which 130 succumbed and 32 recovered. Veterinary Surgeon Fowler was in professional charge of the camp, and his successful efforts in suppressing the disease have received high commendation.

Veterinary Surgeon C. E. Bennett delivered a very interesting lecture at the United Service Institute, on March 15th, General Erskine in the chair, on "The Employment of Dogs in War."

Obituary.

The death of the following members has been notified:—

Bond, W. H., Buckingham	..	..	..	graduated	1872
Aitken, D., Loughborough	..	..	..	"	1879
Bryce, J. H., Stirling	..	..	..	"	1875
Callender, J., Falkirk	..	..	..	"	1880

Notes and News.

THE RABBIT-PEST IN AUSTRALIA.—It would seem probable that the immediate decision which M. Pasteur is reported to have demanded by telegraph from the Intercolonial Rabbit Commission will not be favourable to his claims. Professor Allen, the President of the Commission, drafted a report last December, which deals with the result of the experiments made at Rodd Island with the virus of chicken cholera sent out by M. Pasteur, as well as with the other experiments made under the supervision of the Commission. The *Australian Medical Gazette* states that this report expresses the opinion that the tendency of the experiments made with the virus of chicken cholera is to prove that it is totally inefficacious for the extermination of rabbits under the conditions which prevail in the interior of the continent. The microbes, it is asserted, will lose their virulence after a few hours' exposure on a moderately warm day, or when subjected to the drying effects of wind. The Tintinallody disease is also dealt with at length, the conclusion being that the operations conducted with that outbreak have no scientific value whatever. The disease discovered by Professor Watson, of Adelaide—the *sarcoptes cuniculi*—is also dealt with, and further investigation is recommended with the bladder-worm, which is said to have cleansed the Wairarapa district in New Zealand.

THE SALE OF HORSEFLESH.—In a bill introduced by Mr. Knowles, M.P. for West Salford, it is proposed to establish regulations concerning the sale of horseflesh for human food. The first provision is that every horseflesh shop is to be registered at the office of the local authority, and there is to be posted over the shop, in a conspicuous position, an indication in large letters that horseflesh is sold there. If a person has not asked to be supplied with horseflesh, it is not to be sold to him unless with a label containing the word "horseflesh." If, however, he has asked to be supplied with it, it would appear that no label is required. Medical officers of health are empowered by the Bill to inspect any meat they believe to be horseflesh, and to carry it off in order to have it dealt with by a magistrate, and search warrants may be granted by a magistrate where it is believed that horseflesh intended for sale is concealed. For an offence against the measure the penalty may be a fine of £20, and the onus of proving that any horseflesh is not intended for human food is to rest with the accused. For the purposes of the Bill "horseflesh" extends to the flesh of asses and mules.

THE MAYOR OF TAMWORTH.—The foundation-stone of the new assembly-rooms at Tamworth, to be erected this year in commemoration of the Queen's Jubilee, was laid recently by the Mayor, Mr. Harry Olver, F.R.C.V.S. The building and site will cost nearly £5,000.

A LADY HORSE-DOCTOR.—A clever and learned *Parisienne*—who had duly taken out her diploma as a “Doctoress in Medicine”—lately furnished a fine *appartement*, put a brass plate on her door, and waited, like Bob Sawyer, for patients who never came. The lady, therefore, went through a course of veterinary surgery and medicine, and is now prosperously practising as a “horse-doctoress.” This is evidently a new profession for young damsels, and the Paris “lady vet.” is (the *Daily Telegraph’s* correspondent says) undoubtedly the first of her sex in this country who has ever qualified herself by a course of hippo-pathology for the useful task of prescribing remedies for the cure of the diseases of animals. It is to be presumed, however, that the lady will not continue to compete with the male vets. in treating horses, but that she will confine herself to the lighter labour of alleviating the sufferings of sick lap-dogs.

Correspondence.

THE NATIONAL VETERINARY ASSOCIATION.

DEAR SIR,—As the letters which appeared in the March number of the VETERINARY JOURNAL are again full of what Mr. Hurndall calls “flagrant misrepresentations,” I must once more ask you to kindly publish my final answers to them. Mr. Hurndall accuses me of “intruding myself upon this correspondence,” but surely the Secretary of an Association is the proper person to answer questions relating to it, especially when his actions are brought into question. Mr. Hurndall must not consider he has the exclusive right to question other people, without being questioned himself in return; and I am pleased to find that his mind has been thoroughly disabused on this point. Mr. Hurndall must have very peculiar ideas of “worshipping,” if he considers any of my communications solicit or implore him to do anything of the kind. I believe they were straight to the point, and evidently Mr. Hurndall thinks so, if he actually considers they require him to “bow down and worship.” What I did hope for, however, and what we have never been able to obtain, were the simple, honest “facts” connected with the argument, and he politely tells us he is “not going to satisfy Mr. Banham’s curiosity.”

Mr. Hurndall says my letter in the February number of the VETERINARY JOURNAL is “over-full of flagrant misrepresentations,” and goes on to say that he had “no communication of any sort or description, either verbally or written,” with Mr. J. Simpson, before November. All I can say is, that all the other members of our committee (except Mr. Simpson) kindly informed me that they had not divulged the business of the meeting to Mr. Hurndall. Therefore, my assumption that he obtained his information from Mr. S. is substantially correct. Mr. Hurndall, again, asks me to “retract the charge of untruthfulness;” he surely forgets that he gave me *cause* to make the charge, and hence he is the offender, and as soon as he apologises, I shall be pleased to “retract.”

Mr. Hurndall then endeavours to show your readers “how regardless of exactitude Mr. Banham is,” and defies me to find any such question in his letter to the *Record* of October 27th, as “How it happened that he was not elected on the Provisional Committee?” Here are Mr. Hurndall’s own words, *verbatim et literatim*, from the *Record*: “I am indebted for the *first intimation* of the meeting of the National Veterinary Association [it was a meeting of the *Provisional Committee*.—G.A.B.], held at Red Lion Square, on the 15th instant, but as a member of that Association, who is not behind in the payment of his subscription, and who practises sufficiently near to the metropolitan area to be included therein, I should like to ask how this happens?”

Now your readers can judge for themselves whether this is not asking why he was not included—or in other words, elected—on the Provisional Committee.

Mr. Simpson's answer is thoroughly characteristic; he assumes the air of a courteous, well-meaning, triumphant man; but in the next sentence he spoils it; because he coolly accuses me of "making statements in which there is absolutely *no* truth." So far as I am concerned, his mild, bland manner of telling me that I am making a false statement rings none the less harshly. If Mr. Simpson would only make full quotations, your readers would not be liable to be misled; but he is careful not to do so, for he quotes me as saying "no rule has been infringed;" which, taken by itself, is tantamount to inferring that *none* of the rules have been infringed at any time; but if you will turn to the whole paragraph from which the quotation is taken (VETERINARY JOURNAL, vol. xxviii., page 148, lines 24 to 28), you will find that it meant that no rule had been infringed with reference to the election of this year's Provisional Committee. I should very much question whether even Mr. Simpson, with all his business tact, can point out any code of rules for an association of any kind that have not been occasionally infringed. I do not deny, nor have I ever said, to my knowledge, that our rules have not been slightly departed from at times; but what I do say and maintain is, that the Association has never suffered therefrom, neither have these deviations been made without the consent of the Council or a committee.

Now we come to the "abuses of privileges" he complains of. I should like to know what harm was done to the Association, or what rules were violated by any of the petty complaints he endeavours to bring against me: 1st, Much to his annoyance, it appears, I asked our members to exchange photographs with me; and I repeat I shall still be very pleased to do so at any time, even if such practice is tantalising to Mr. Simpson. Mr. Simpson makes special complaint of my appealing to the members of the N.V.A. for their vote at last election of Council, on an official circular. The latter was an oversight on my part, but I should have thought even the most malicious person might have let that little fault remain unnoticed until a second attempt at such an awful abuse of privilege had been committed. I know this offended some *few* members of the N.V.A. at the time, although I have never yet had any *official* fault found with me, neither have they told me to stop the practice—not that I intend giving them cause to do so, for I am thoroughly at one with those who think the N.V.A. should have nothing whatever to do with veterinary politics. Moreover, I thought from the way the subject was received by the members present at Newcastle last year, that none of them considered the subject worthy of comment, except the expounder of the complaint—and even he ought to have been satisfied with the result; but I am sorry it still grieves Mr. Simpson. I wonder whether the late President of the R.C.V.S.'s action of altering the order of the names on last year's voting papers *without the sanction of the Council* (which brought Mr. J. Simpson's name from seventh to the top of the list), ever grieved that gentleman, or whether Mr. Simpson considered that a "breach of privilege" to the Royal College of Veterinary Surgeons. I believe he is a very generous man; so, if he chooses, he can this year return good for evil by exerting his energies to secure me a seat on our Council, and I shall be pleased if all your readers will assist him.

As to the last abuse he mentions, viz., that of asking my fellow-members of the N.V.A. to recommend me a good shoeing-smith, I have yet to learn where the abuse comes in, as I did not use the *official circular*, neither did the Association suffer thereby. If Mr. J. Simpson was not pleased with this method of procedure, I can assure him that I was; for, through the kindness of a mutual friend and member of the Association, I was fortunate enough to

secure the services of a thoroughly good man—a *rara avis*. I hope, when Mr. Simpson next writes about the Secretary of the N.V.A., he will have something more substantial to say in his favour than he has said in his disfavour.

My "trump card," as Mr. Simpson calls it, has been dealt with above, but I may say the following is "a fact," of which I have "documentary evidence." The six Vice-Presidents and myself met to elect the Provisional Committee, and all of them (except Mr. Simpson) informed me that they did *not* divulge the business of our Committee to Mr. Hurndall. Therefore your readers may guess—as I have had to do—the source whence that gentleman did receive his information.

The most ungenerous part of Mr. Simpson's last reply to this much too protracted discussion is his allusion to the "very wholesome correction" *he* evidently considers I received at the Eastern Counties Association, which, by-the-by, is quite outside this discussion. He, however, did not tell you that the Eastern Counties Association decided not to make that subject public in any way, and in the face of this he alludes to it. Moreover, he did not tell you that I promised our genial, kind-hearted, and peace-making President that I would say nothing further about it, but leave the matter for the Association to deal with as they thought fit; and if this was to Mr. Simpson's entire satisfaction, he ought to be delighted, and not spoil it by breaking faith with the Association by triumphing in the public press; and, therefore, I consider it a most contemptuous allusion—*Valeat quantum valere potest*.

I am sorry to find the report I received of Mr. Simpson's litigiousness is corroborated by himself, and I hope I have said nothing that can in any possible way be termed libellous; for I can assure him that I have no time nor money to spend in defending any such actions on my own account, whatever I might do for others.

I again thank you, Mr. Editor, for your courtesy in permitting me to place my case before the profession, and trust I shall not be called upon again to trespass upon your generosity in defending such trivial charges as have been brought against the N.V.A. and

GEORGE A. BANHAM,

Downing Street, Cambridge.

Hon. Gen. Sec., N.V.A.

DO BOVINES PERSPIRE?

SIR,—In reply to Mr. Gray, I do not pretend to be an authority on the histology of the skin, and must fall back on the researches and teaching of Dr. Burdon Sanderson, and until some one equally able proves conclusively to the contrary, I must still hold those views.

Has Mr. Gray mistaken the effects of "cutaneous respiration" for "perspiration"? The former goes on at all times, and is accelerated in certain stages of disease; the watery vapour given off during that process coming in contact with a colder medium, condenses and hangs on the skin and hair in bead-like particles. Hence the condition miscalled "sweating," met with in Parturient Apoplexy and other bovine ailments.

The "favourable sign" met with in "healthy cattle packed together in close-covered yards" is partly due to the same cause, but principally to the increased action of the sebaceous glands, and called by farmers "sweating." Any one who will take the trouble to handle a number of feeding cattle will be soon convinced on this point.

In dealing with owners of animals it is often necessary to make use of "familiar expressions," but in writing for medical journals this should be avoided if the terms used are scientifically incorrect.

Mansfield Woodhouse, Notts.

JOHN BRETT.

ARE CORNS IN HORSES' FEET HEREDITARY?

SIR,—Some time ago I attended a cart mare belonging to a small farmer in this district. She had what I might safely term "bad corns" in both fore feet. This mare's first foal was bought by a neighbouring farmer, and strange to say, when shod for the first time, at two and a half years old, it had well-developed corns in both feet.

P. BEATTIE.

Boyfern Fishrie, Turriff.

A CORRECTION.

DEAR SIR,—In the report of the proceedings of the Yorkshire Veterinary Medical Society in this month's Journal I am made to have said that the insertion of the ordinary *tampon-cannula tube* was superior to the operation of laryngo-tracheotomy, for certain reasons mentioned by me at the time. What I wish to draw your attention to, and wish you to mention in your next issue, is the fact that I said "the ordinary tracheotomy tube," not, as reported, "the tampon-cannula tube."

GEO. W. CARTER.

Keighley, March 16th.

"HIPPACEA."

DEAR SIR,—I would not trouble you again, but Mr. Nettelton's attempt to emphasise his previous mis-statement, that we sent "Hippacea" on sale or return to Northallerton, necessitates my doing so.

We have never sent "Hippacea" to any one in Northallerton on sale or return, but we did execute a *bona-fide* order for "Hippacea" from the chemist Mr. Nettelton names, Mr. Warrior, who paid for same in the ordinary course.

If Mr. Nettelton seeks further proof that he is in the wrong, we shall be pleased to furnish it, if he will give us the pleasure of a call at any time during business hours that may be most convenient to himself.

F. H. BOWDEN, Managing Director.

OPERATION FOR THOROUGHPIN.

SIR,—Having been asked by one of my professional brethren for some further information concerning my article in the VETERINARY JOURNAL for February, on the "Operation for Thoroughpin," I thought I could not do better than send you a copy of the questions and answers for publication.

1. How long does it take to effect a perfect cure? About eight or nine weeks. If the horse has a Thoroughpin on both hocks only one leg can be operated on at a time.

2. Is it necessary to apply a high-heeled shoe? I prefer using a high-heeled shoe.

3. Does the operating iron require more than once heating for each sac punctured? Once heating of iron suffices for each sac.

4. Would you mind giving a drawing of your iron? Drawing herewith supplied.



5. Does the iron give the operator any idea as to when you have reached the wall of the sac? The movement of the iron can be easily seen under the skin from without, and the operator must be guided by his own judgment as to when he has reached the opposite wall of the sac.

6. How much oil of turpentine do you inject? As much as fills the sac.

T. FLINTOFF, A.V.D.

SIR,—Referring to the "Remarks on Firing" made by Mr. Flintoff, V.S., in last month's Journal, allow me to say that, in the first place, the method he suggests, although it appears to be so far satisfactory in the hands of Mr. Flintoff, can have little or no advantage over the old methods of transverse and feather firing, either in its severity or in setting up the reparative inflammation, seeing that the surface with which the instrument recommended comes in actual contact is less, and that the instrument must not be allowed to penetrate deeper than the skin, the latter being the case in the ordinary method.

Secondly, he states, "Many readers will doubtless argue that to fire a structure like the perforans tendon in this way will have the effect of destroying the elasticity of the tendon." Now, I think all will agree that to fire that tendon would be a very difficult matter, as the perforatus forms a sheath for, and is posterior to, the perforans; nevertheless, as we all well know, a great and permanent benefit is often obtained by firing in cases of sprain of the perforans tendon, which benefit is, in my opinion, effected by its being involved in the surrounding reparative inflammation, which commences primarily in the cutaneous and subcutaneous tissue. As to the operation destroying its elasticity, I can hardly see how it is possible for it to do that, since tendons composed of white fibrous tissue are entirely inelastic, as distinctly stated by Principal Williams in his work on Surgery.

With regard to the after treatment advocated I have little to say.

I quite agree with Mr. Flintoff in the application of a blister of full strength to the newly fired parts, but I can scarcely see the necessity of applying, as he recommends in the second and third blistering, the blister twice the ordinary strength, and for at least three-quarters of an hour each time.

For my own part, I maintain that in almost any case in which blistering is required, if it is well applied for the space of about fifteen minutes it will have punctured as deeply as if it had been applied for three-quarters of an hour, so that it is a loss both of time and labour to continue the application for the length of time suggested by Mr. Flintoff.

Wolverhampton.

G. M. YARDLEY, M.R.C.V.S.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. Roberts, Wrexham; H. Kidd, Hungerford; G. A. Banham, Cambridge; R. Sturge, Ontario, Canada; W. T. Adams, A.V.D., Oosoor, Madras; Messrs. Arnold and Sons, London; E. E. Bennett, A.V.D., Woolwich; G. T. Pickering, York; P. Beattie, Turriff; J. Brett, Mansfield Woodhouse; R. S. Barcham, North Walsham; J. Cammack, Kimberley, S. Africa; G. W. Carter, Keighley; J. Malcolm, Birmingham; T. Flintoff, A.V.D., Dublin; R. Rutherford, Edinburgh; G. M. Yardley, Wolverhampton; F. H. Bowden, London; T. B. Goodall, Christchurch; A. W. Hill, London.

BOOKS AND PAMPHLETS: *Dr. Boschetti, L'Anatomia dell'Homo*; *Stebler, Schröter, and A. N. McAlpine, The Best Forage Plants*; *Bibliographer*; *Dr. F. Lupinacci, La Mascalcia Militare*; *Report of the Minister of Agriculture for the Dominion of Canada*; *Memorandum on an Outbreak of Surra at the Stables of the Bombay Tramway Company*.

JOURNALS, ETC.: *Quarterly Journal of Veterinary Science in India*; *Russian Veterinary Journal*; *Journal of Medicine and Dosimetric Therapeutics*; *Clinica Veterinaria*; *Journal of the National Agricultural Society of Victoria*; *Wochen-schrift für Thierheilkunde und Viehzucht*; *Recueil de Méd. Vétérinaire*; *Deutsche Zeitschrift für Thiermedizin und Vergleichende Pathologie*; *Annales de Méd. Vétérinaire*; *Der Thierarzt*; *American Live Stock Journal*; *British Medical Journal*; *Echo Vétérinaire*; *Revue Vétérinaire*; *American Veterinary Review*; *Lancet*; *Live Stock Journal*.

NEWSPAPERS: *Singapore Free Press*; *Bournemouth Visitors' Directory*; *East Cumberland News*; *Westmoreland Gazette*; *Daily Chronicle*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

MAY, 1889.

HEREDITARY DISEASES.

BY R. STURGE, V.S., ONTARIO VETERINARY COLLEGE, CANADA.

IN dealing with this extensive subject, it is not my intention to give a long list of diseases which are hereditary—indeed, my knowledge of pathology would not permit it; but to note a few general principles, so that we may have a definite idea as to what constitutes a predisposition to, or an hereditary disease.

That hereditary laws have been recognised as an important factor of disease for thousands of years, we have only to refer to the passage in the Decalogue, which declares that the iniquities of the fathers are visited upon the children, even to the third and fourth generation. This is a concise statement of the operations of a physiological law which holds good in the lower animals as truly as in man. The physical and mental infirmities of the sire and dam are often transmitted, even beyond the third and fourth generation.

An hereditary disease is one in which the disease or tendency to the disease existed in one or more of the ancestors. And before going further it would be well to review a few of the important laws of heredity dealing with this question. All are aware of the old law that "like begets like," and of the value of pedigree. Animals in a state of nature are in every sense of the term "pure bred," for they breed true every time, and breeding with such animals would be less a game of chance. We endeavour with our stud and herd books to copy nature; we endeavour to fix certain qualities, by breeding with animals possessing those qualities to a marked degree for a great many generations. These fixed qualities will be transmitted to a greater or less extent with almost unerring certainty. Infirmities, such as bad conformations and predisposition to disease, "bred in the bone," will be transmitted as surely as good qualities, and intensified if you wish it.

Thus, by mating animals with weak pasterns the progeny is still more liable to disease of those parts.

"Sports" will occasionally turn up, but less so as the breed becomes perfectly pure. They may stay in a few generations, and if not encouraged will disappear.

The peculiar law of reversion or atavism will again and again crop up, accounting for the occurrence of disease otherwise unaccountable. In the human subject many nervous troubles are said to skip a generation and then crop up again, and so it is with specific ophthalmia, and possibly some other diseases of the eye. It is difficult to say whether the sire or the dam will have the more influence on the progeny. Provided they are equally well bred, the result is sometimes pretty well shared by both, though generally slightly in favour of the stallion. But so much seems to depend on the character, disposition, and so forth of the progenitors, that it is impossible to lay down a rule. It is a peculiar fact that often the mother marks herself more on the female progeny and the sire on the male. But in the case of common mixed-blooded mares put to a well-bred stallion the qualities of the sire will predominate in nine cases out of ten. Thus it is that some mares breed after the horse, as it is called. In regard to some diseases due to an actual poison, the foetus is more likely to become affected through the mother, having such close connection with her through the placenta.

In thinking of hereditary diseases, it is well to remember these few laws, and I will proceed to classify them as best I can.

I. Diseases *directly transmitted* from the sire or dam.

(a) Those due to a specific germ, in which the disease exists prior to birth. In this case the disease has been transmitted to the foetus either from the spermatic fluid, the ova of the female, or through the placenta. Among such diseases whose maternal heredity is well known, both in man and in the lower animals, are Small-pox, Measles, Scarlet Fever, Syphilis, Chicken Cholera, Symptomatic Anthrax, Pleuro-pneumonia, Small-pox in sheep, and Tuberculosis. The influence exerted by the male parent in the transmission of contagious diseases is, however, more limited than that of the mother, although Syphilis in man and Tuberculosis in animals are known to be inherited by the offspring of the male parent affected with these diseases. The extent to which Glanders and Anthrax Fever are contagious is a question of great interest, and there seems to be a difference of opinion regarding them.

(b) Where the inherited conformation constitutes a disease, such as Parrot-mouth, Undershot, congenital malformation of the pelvic bones, etc.

(c) Where the disease is directly inherited, as in animals born blind, deaf, etc.; but these instances are rare in the lower animals.

II. By far the most fruitful cause of disease is where a *predisposition is inherited*, and if exposed to unfavourable influences the disease is easily produced. This predisposition may be due to conformation, minute structure, temperament, colour, and so forth, and we will deal with it under these heads.

(a) Predisposition due to conformation. We have decided that certain conformations are required for certain work, and it has been found by experience that other conformations predispose to disease. Thus, short, upright pasterns and straight hind legs predispose to bony diseases, as concussion is thus increased. On the other hand, very oblique pasterns or crooked hind legs predispose to strains, breakdown, curbs, etc.

An animal which is "tied in" below the hock is subject to bony diseases of that part; for these bones are receivers of weight and distributors of concussion, and their capability of the performance of that function depends upon their size and development. All are aware of the value of good, large, well-formed joints.

It is sometimes found that the anterior articular surface of the distal end of the femur is unnaturally level, the external trochlea being but poorly developed. Such a conformation predisposes to luxation of the patella. This has been notably hereditary in some of the heavy sires used in this province.

Conformation is a very active factor in diseases of the feet; weak feet are predisposed to diseases of many kinds, and narrow, contracted feet in the same way.

These different types of faulty conformation are transmitted solely by heredity.

Often conformation betrays the constitution of the animal; thus a narrow chest or a weak "middle piece" speaks plainly of the development of the structures it contains, and there is no more important predisposing cause to disease than weak vital powers. If the lungs and heart are but poorly developed the whole of the tissues must suffer, as the one is to aërate the blood, and the other to distribute it throughout the body. If an animal cannot assimilate nourishment properly, every cell in the body must suffer.

(b) Predisposition from lack of constitutional vigour. It is a recognised fact among all breeders that close in-and-in breeding, especially in an established race, results in loss of vitality and constitutional vigour in resisting unfavourable influences. Thus, many of our pure-bred cattle are subject to Tuberculosis, and do not seem to have sufficient power to resist the various diseases which flesh is heir to. Nobody will deny the fact that disease is

far more prevalent in our fancy herds than in the common cattle of the country. But the mode of breeding, the management, and the feeding have much to account for this.

In the first place, long-continued in-and-in breeding has been resorted to, to a great extent, in the development of all the "made breeds," and doubtless this has been the necessary course in order to fix certain qualities. But the animals have been pampered and forced from their youth up, and the selection of sires with constitutional vigour has only been a secondary consideration. And so you see that this loss of hardiness, strength, and endurance is not necessarily an accompaniment of pure-breds, but depends largely on the above facts.

Many examples of the truth of this statement can be brought forth, and I have only to mention in its support the thorough-bred horse. Here is a breed that has been moulded by the hands of man probably longer than any other race of the domesticated animals. Yet there is not a breed in the equine race that can touch it for speed and endurance combined. The simple reason for this is that those sires have been chosen which were noted for their vitality; for on this depended their ability to stand in a long, closely contested race. None of the practices that have combined to impair the strength and vigour of our pure-bred cattle, sheep, and swine have been resorted to in the breeding of the thorough-bred. In-breeding and pampering have been frowned at, and the selection of the stoutest and best specimens of the breed has been the touchstone of their success.

In dogs the evil effects of long-continued in-and-in breeding are plainly seen, and give rise to much trouble. Rickets, Hydrocephalus, Epilepsy, and even Idiocy are frequently seen in some strains that have been bred in that way.

There may be a lack of constitutional vigour produced in the offspring by the stallion being in a weakened state at the time of service, such as is produced by wasting diseases, by too frequent coition, by extreme old age, or from being too young. The same remarks apply to the dam during her pregnancy.

In the majority of cases the conformation of the animal betrays his constitution to the judge of live stock. The shallow and narrow chest or the weak crops show weakness of vital organs, and the slab-sided, herring-gutted, washy looking animal shows a tendency to abdominal troubles and a poor constitution generally.

(c) Predisposition from temperament. This is a difference of organisation, and there may be a want of development of certain parts, or the development may be carried to extremes. There certainly exists a remarkable difference among animals in the way

in which certain structures and qualities are developed, not only in different breeds, but in different animals of the same breed.

The three chief temperaments which we are interested in are the sanguineous, the nervous, and the lymphatic.

The sanguineous implies an activity of the circulatory and blood-producing organs. This is well illustrated by the fact that the most highly developed animals and the most highly developed parts are more subject to the inflammatory process than those lower in the scale of development.

The nervous temperament is closely allied to this; for where there is a large blood supply there is generally a large distribution of nerves, and therefore this is shown in the same way.

But *nervous temperament* also implies a want of proportion of some of the functions or properties of the nervous system. Animals with this temperament have not necessarily extra nervous power; indeed, the opposite is often the case. They fret easily, soon become exhausted, often scour on excitement, tremble with fear, and lose their appetite easily, thus predisposing to many diseases.

The lymphatic temperament. In this class of animal there is a want of the sanguineous and nervous temperaments, of arterial tonicity, of quality throughout the system. The circulation is sluggish and the blood-vessels are inactive; the capillaries and nerves, especially of the dependent parts of the body, are often congested and œdematous. This accompanies many of the coarser breeds, and is shown by the want of quality throughout the system.

These animals, owing to their low organisation, have great difficulty in throwing off disease; they do not seem to have that compensative power of the well-bred animal. In many cases they are tardy in getting disease, but the recovery is also slow. If effusion takes place it is difficult to cause its absorption, and in such an animal it is often difficult to establish the reparative process.

The whole body is spoken of by physiologists as being composed of a number of cells, certain properties, at the expense of others, being developed in the cells to constitute the different tissues. Compare the cells of a lymphatic animal with those of a well-bred one, and you will find them coarser, looser in texture, and they have not that nicety of finish on them that you find in the animal showing quality. It is the same with every cell in the body. Compare the bones. The specific gravity will be less, the shell of compact bone will be thinner, the little plates of the cancellated structure, under the microscope, will appear thicker but more spongy, and the whole structure of a looser texture. Such bone is obviously predisposed to disease.

Animals with the lymphatic temperament are predisposed to Lymphangitis, skin diseases, diseases of the feet, bony diseases, and many others too numerous to mention.

(*d*) Predisposition from colour. That this has some influence in predisposition to disease has been shown by numerous cases of Crusta Labialis recorded in the meetings during the winter. Possibly colour has some influence in other skin diseases and in diseases of the hoof. Melanotic tumours are associated almost entirely with certain colours in the equine race. It has been observed that where you have a white patch round the eye the organ on that side is more predisposed to irritation than its fellow.

(*e*) And now I wish to make a few remarks on the predisposition to disease which exists in some animals, which cannot be accounted for by any of the above causes; and I refer to where I think the minute structure of a local spat is changed, and the changed condition is transmitted, in a modified state, to the progeny. There are Splints, Spavins, and Ringbones that I do not see how to account for in any other way. A sire with a perfect limb, save a Ringbone, often transmits the disease to the progeny, in which it is developed with very little exciting cause. I do not refer to a case in which the Ringbone in the ancestor was produced purely by accident.

Is it not possible that the minute structure of the bone in that locality was altered and transmitted as such? There is no reason why it should not, the same as any other quality which has become fixed in the breed.

Take another example, in Sidebones. Many colts from certain sires have been known to develop Sidebones with little no exciting cause. There must have been some abnormal condition in the structure of the cartilage which rendered it particularly liable to take on the ossified state.

In some diseases one would be led to suppose that it was all in the natural course of development for the animal to assume these abnormal conditions; indeed, it is said that colts have been born with splints, but I could not vouch for the verity of that statement.

It has been stated by some writers that in the case of some bad roarers known to possess hereditary taint the recurrent laryngeal nerve supplying the muscles on the left side is wasted away, and in many cases is nothing more than a mere shred. Is it not possible that such a condition was inherited?

In navicular disease, besides the external conformation and action of the animal being predisposing causes, might not the minute structure of the navicular bone and of the bursa be abnormal, and particularly susceptible to any unfavourable influences? The same remarks might apply to Canker, to Laminitis, to diseases

of the eye, to some forms of Locomotor Ataxia, and a number of others which will readily suggest themselves.

On referring to a small work of Professor Law's, I find he lays down a rule that a disorder which is active and causes suffering at the time of reproduction is most likely to tell injuriously on the progeny, and in support of this he quotes the following interesting case: A mare not predisposed to recurring Ophthalmia had a burdock entangled in her forelock, so as to be directly upon the eye, which was thus kept inflamed and discharging during the course of pregnancy. The progeny, a filly, had the eye on the same side defective, and represented by a small *opaque* black mass. The dam recovered, and afterwards bore colts with sound eyes, as did also the one-eyed filly, in due course of time.

He thinks that colts born while the mother is suffering from the inflammatory action of periodic Ophthalmia are more subject to severe "moon-blindness" than those which are born after the mother has become totally blind and all irritation ceased. This is still more light on this important question, and should set us observing more closely, as there is probably more in this than is generally acknowledged, and it is quite possible that in breeding animals during the acute stages of disease, even if the disease itself is not produced, there is a tendency transmitted as a legacy to the progeny.

(*f*) In some cases it is thought that the factors of disease, be what they may—microbes and what is termed constitutional diathesis (for want of a more lucid explanation)—may exist in the system and operate at certain periods of life, during which time the system may be undergoing a change, or the necessary influences may be supplied for its development.

Sometimes tissues degenerate early, especially in the fatty or calcareous manner, thus explaining how many members of a family die at a certain age of fatty heart or apoplexy. But, as Green says, how diseases and tendencies to diseases which are not due to any specific poison are handed down we know no more than we do how it is children inherit the features of their parents.

And, before closing, I should like to direct attention to two or three of the more common hereditary diseases of the horse, which are of peculiar interest to us.

Roaring.—This has long been considered an hereditary disease, and is probably becoming more common on this continent every year. It is produced by exciting causes, such as hard work, especially during the growing period of life, and by tight reining; but in the majority of cases there exists a tendency to the disease.

That this must exist in some cases is plain, when we see a large

percentage of the progeny of some sire turn out roarers with but little exciting cause. Such of his colts as develop the disease often show a well-known conformation, by which we can to some extent foretell their after usefulness. Perhaps he is a large, overgrown gelding with a long, narrow neck, particularly clean cut about the region of the throat, narrow in the intermaxillary space, and often with a fine tapering muzzle. Such a conformation would lead you to suspect a roarer, but all these points are not always present, and are often not plainly marked.

The long, narrow neck and fine muzzle indicate a long, narrow trachea, which will be accompanied by a corresponding larynx. Of course, this conformation will be hereditary, and if it indicates anything more, that also will have been transmitted. It is thought by some that the recurrent laryngeal nerves from the pneumogastric, especially the left one, are deficient. They may exist, but are not properly developed, and therefore the supply of nervous power to the larynx is deficient. As soon as that part is called upon to exert itself equally with the rest of the organs of the body it will be incapable of doing so, and the result will be a roarer. Probably the anatomical structure of the larynx itself—the shape of the cartilages, the attachment, position, and development of the muscles and ligaments—is defective. All these changes may be the result of weakness, inherited from ancestors whose anatomical structure was gradually changing, the result of the peculiar kind of work they were endeavouring to perform.

Specific Ophthalmia.—I think there can be no question as to heredity being an important factor in this disease. Possibly, future investigations will show it to be due to a microbe, but that does not affect the division of the subject we have to deal with. It is true that years ago, when the science of ventilation was less put into practice, and stables often resembled hovels and pigsties, it was more common. Then the exciting cause was kept up, and any predisposition to the disease was soon tested; but now circumstances are not so favourable for its development, yet it is far too common at the present day, and it is still the general custom to breed affected mares, and in some cases stallions, suffering from the disease.

It is thought by most veterinary writers that this disease is primarily a constitutional one, the same as rheumatism or gout, but having a tendency to attack the organ of sight. Possibly this is the case, but I think the minute structure of the visual organ of the colt so predisposed is unnatural to some extent, rendering it liable to disease. In many cases the eye shows lack of development, and even where to all appearances it is full and healthy may not the minute structure be abnormal?

If constitutional, why not inflammation whenever there is a weakened state of the system, such as in the various fevers that horse flesh is heir to? But expose the animal to the fumes of ammonia, in a dark, ill-ventilated stable, expose him to agents which directly affect this organ, and he will soon show signs of recurrent Ophthalmia. If constitutional, why does not the fever recur when Cataract is established? A few exceptional cases are recorded in which the inflammation has been kept up for a number of years after this change has taken place, and then the disease might be affecting the substance of the optic apparatus, though it has lost its function. As I said before, Professor Law thinks that a colt would be more likely to suffer severely from this affection if he were developed in a mare while she was suffering from the acute inflammatory action of periodic Ophthalmia.

Diseases of the Feet.—Briefly, a perfect foot, in regard to size, should be in proportion to the animal's weight. It should neither be too flat nor mule-shaped, a happy medium between the two being desirable. The inferior part of the wall should describe a nice full circle in front, it being well carried back and not falling in at the sides. The sole should present a large degree of concavity, and the frog be free and healthy, the heels free and open and a moderate height from the ground. The texture of the horn should be fine, showing a hard, glistening appearance. Generally speaking, marked deviations from this formation predispose to disease.

Conformation is not only a cause of disease, from the feet working at a mechanical disadvantage, but may lead us to believe that certain structures are but poorly developed. Thus, in contracted heels the fatty frog is atrophied, and concussion will thus be encouraged.

In Navicular Disease, due to heredity, not only is the fatty frog small and wasted, but probably there exists a deviation in the minute structure of the parts of the navicular bone and bursa, most commonly affected by the disease. The progress of the disease may be hastened by the upright conformation of the pasterns and general action of the animal. If the texture of the horn should be coarse and open, it is obviously unfitted for certain kinds of work.

As to hereditary Canker, I think it is met with more in the heavy horse, and the lymphatic temperament has much to do with it, for the part would in such an animal be of a low organisation, and the phenomenon of a fungous growth in such a foot is not surprising.

I do not wish to convey the idea that all the diseases I have mentioned are hereditary in every case; in fact, hereditary ten-

dency of the sire and dam is sometimes unjustly blamed. Young animals are more prone to disease than those in the prime of life. Thus, the bones are far more vascular at this time, and the constitution not so strong, and if abused, disease is apt to be the result. And in many cases, even where a slight hereditary taint exists, if well taken care of at this critical period, the tissues may be so far developed, and strong enough to resist the exciting cause.

THE GENERAL SANITATION OF STABLE BUILDINGS.

BY FITZPATRICK EASSIE, M.R.C.V.S., LONDON.

(Continued from page 249.)

It is obvious that if the water be allowed to evaporate below the "dip line" the principle of the trap is destroyed. Similarly, if the water becomes saturated with gaseous products it no longer intercepts them. The drain, therefore, requires to be continually flushed, and for this purpose a patent automatic flushing box to contain thirty gallons should be placed at the top end of the drain.

There is yet another necessity which is imperative, and that is the provision of a constant current of fresh air to traverse the drain. For this purpose the trap which we referred to above as placed at the sewer end of the drain is superseded by what is known as a proper *disconnection chamber*. This should be placed as near as possible to the stable wall, in which there is a *fresh air inlet*, leading, by way of the chamber, to the drain. From the distal end of the drain, a three-inch ventilating pipe is led to the outside wall, which it traverses until it ends at a point above all windows, and away from the down draughts of chimneys. The passage of air across this elevated pipe creates an *aspirating* force, and a constant current of air is maintained through the drain. It is important that this ventilating pipe be led up *outside* the wall, for fear of any subsequent leakage into the stable. A rain-water pipe, suitably placed, may occasionally be utilised for this purpose with advantage and economy.

Boiling water is sometimes injudiciously used for swilling stable drains; but when we consider that the temperature of the air in the drain is fully 30° F. higher than the atmosphere of the stable, and that heat only hastens decomposition, we shall realise that the practice is not to be tolerated.

Earth Drainage.—In the above paragraphs we have endeavoured to deal with the subject of drainage *by water*, as fully as is consistent with the scope of this paper. We have yet to allude to another method of treating stable refuse—the *dry* system, or removal and storage in *earth*. For this purpose it is important to

secure earth of rather a loamy nature, yet sufficiently porous. Sandy soil is of no use at all. The surface water is run off by channels into earth tanks placed outside the stable, where, with the solid material collected, it is mixed with the earth. The resulting manure is treated with some disinfectant which will not deteriorate its value—for this purpose common salt has proved very efficient—and is removed at appropriate intervals, to be used in some such way as *irrigation* is carried out for the improvement of the land. There is no legal restriction on this earth system, even in towns and in dealing with human excrement, and it is particularly well adapted for stables, cowsheds, and piggeries in the country.

Slaughter-houses.—It will not be inappropriate here to devote a few words to the question of slaughter-houses. The inhabitants of Great Britain are morally, if not politically, of a conservative turn of mind, and their tardy acceptance of some acknowledged improvements is a matter of history. For more than two centuries after the recognition of the Gregorian Calendar abroad, the independent Britisher was content to put up with the inconvenience of the “*old style*.” In our schools, even yet, the rising generation is taxed with the incongruities of an absurd system of weights and measures, notwithstanding the matured existence of the metric system. The Parisians, as far back as the beginning of this century, set us a salutary example by the erection—under an Imperial edict—of public *abattoirs*, as a substitute for private slaughter-houses. We quite realise the nuisance of these detached establishments, but we have not distressed ourselves about a remedy. In Paris there are at present at least five large abattoirs, together comprising 240 slaughter-houses, to each of which are attached the necessary offices and appliances, including stalls, pens, coppers, fat-melting pans, etc. These abattoirs are, in fact, individually a colony of slaughter-houses, adequately drained, properly ventilated, and provided with an abundant water supply. We have, however, begun a reformation in this respect, and we may hope that it will shortly become general. There is now an abattoir in the metropolis, in Copenhagen Fields, another in Edinburgh (as far back as 1851), and similar establishments have since been instituted in other large towns.

Water Supply.—The abundant supply of wholesome water for the use of animals is relatively of as much importance to their health and comfort as it is to our own, and it is our province not only to insist upon the purity of its supply, but also to look upon it with suspicion as an important and capable factor in the etiology of disease.

Water is derived from various sources, and in a natural state is always more or less impure. When *rain water* is collected before it reaches the earth it contains only such impurities as it derives

from the air, and in the country these substances are practically limited to oxygen, nitrogen, and carbonic dioxide. On the whole, however, owing to its relative purity and great aëration, rain water is palatable and wholesome.

The soluble constituents of *river water* at its source are chiefly derived from the rocks through which the feeding springs have percolated, but the dilution of the supply by the influx of tributary waters lessens the percentage of solid matter held in solution. The escape, moreover, of carbonic anhydride, from exposure at the surface of shallow streams, necessitates the precipitation of salts held in solution by its aid. The deliberate pollution of rivers by the drainage of towns and manufactories adds, of course, immensely to the amount of solids suspended and dissolved.

The purity of *spring water* is variable, notwithstanding its popular reputation. In some spring waters the quantity of dissolved solid matter is very trifling, whilst in others it may attain to 2,000 grains per gallon. No reliable estimate, however, of purity can be formed from the knowledge of the total solids, unaccompanied by further information.

The suitability of water for potable use depends upon (1) the source of supply, (2) the total solid matter held in solution, (3) the organic matter held in solution, and (4) the action likely to be exercised on the water by the means of supply. We have briefly referred to the sources from which water is obtained, and to the proportion of solid material held in solution in each.

The presence of chlorides is generally indicative of animal contamination, unless in the neighbourhood of salt districts and in sea-water. "Free ammonia" is obtained by distillation from almost all waters, but if a sample of water, after this process is complete, be treated with an alkaline solution of potassium permanganate, and further distilled, and if it is then found to contain ammonia, it may be safely inferred that the water is contaminated by organic impurities. If water contains more than .08 parts per million of this "albuminoid ammonia" it is impure, according to the standard.

The different geological formations materially modify the character of water, besides determining its collection and the depth at which it can be procured. Percolating through the substance of rocks, it assumes to itself something of their nature. In the limestone regions springs are often fed from subterranean reservoirs, which have been formed by the gradual solution of the rock by water charged with carbonic dioxide. Again, for instance in the chalk districts, springs and streams are few, owing to the general porosity of the soil. The same is the case with the sandstones, old and new. But in all these formations deep wells yield largely.

The final point with regard to water supply is the consideration

of the means of artificial storage and transit. Large cisterns and tanks require to be both covered and ventilated, and all cisterns should be made preferably of slate or of galvanised iron. With leaden tanks the metal fortunately becomes coated with a comparatively insoluble salt, which prevents any further action, so that upon the whole they don't do much harm. The purest and most oxygenated waters affect lead the most, and next to these waters which contain much organic material; but it does not necessarily follow that the corrosion of the lead surface means a proportionate dissolution of the metal in the water. Water containing calcium carbonate, phosphate, or sulphate, and magnesium salts, has the least action on lead, because after the first reaction, resulting in the substitution of the metallic base, further action is prohibited.

When zinc pipes are alloyed with lead, as they frequently are, a galvanised current is induced which hastens the solution of the metal. For protection, a block tin pipe may be enclosed in the lead one, as in Haine's patent, or cast and wrought iron piping may be used for the conveyance of water, which should be treated internally with Dr. Angus Smith's solution.

In houses and stables the water service and drainage systems frequently enjoy an intimate acquaintance, which naturally results—nature is essentially consistent—in the corruption of the good by the evil. Nothing is more frequent than for a cistern to supply both a closet and a draw-off tap. This state of things is bad enough if the closet is of good pattern and the supply in the cistern frequently renewed. Imagine, however, a filthy privy in direct connection with a supply of water which remains for a lengthened period in the cistern! It would avail us little if we put a stable in full sanitary order, and left the atmosphere and water supply at the mercy of an ill-conditioned closet. For a stable closet any cheap pattern with a respectable trap will suffice. An automatic box, with a chain and ring, will hold sufficient water for a single flush, and will at the same time effectually disconnect the cistern from any danger of contamination.

The allowance of water per horse in the Army is, I believe, for cavalry, 8 gallons for all purposes; and for artillery, 10 gallons a day. The amount of water which animals require to drink depends largely upon the climate and season and the character of the food. Horses require about 6 gallons a day on dry food, cattle 6-8 gallons, and sheep and pigs $\frac{1}{2}$ -1 gallon. This becomes an important consideration in the question of transport.

Ventilation.—The genesis of the subject of ventilation may be said to be physiological, because the primary necessity for ventilation arises from the waste of oxygen in tissue combustion, and the production of material antagonistic to tissue vitality.

In the lungs, therefore, we find an immense capillary surface, only separated from the inspired air by the most delicate of pavement epithelium.

Much stress is laid, in various works on ventilation, upon the dangers of the accumulation of carbonic acid gas; but as a matter of fact, both men and animals can tolerate a much greater percentage than that which they are ordinarily called upon to breathe. It is not this gas itself which we have particularly to dread, but the substances which generally accompany it. With this idea, and because it can be more readily estimated than these organic materials, and also because it bears a constant *ratio* to them, it has been selected as an index of atmospheric purity.

The composition of the external air is liable to singularly little change, and this is accounted for by the diffusive power peculiar to gases themselves, the influence of air currents, and the reciprocal reactions on the atmosphere of animal and plant life. Animals, we know, inspire oxygen and nitrogen, and expire carbonic acid, aqueous vapour, and ammonia. Plants, on the other hand, absorb carbon dioxide, which, under the influences of sunlight and chlorophyll, gives up its oxygen, which by exhalation is restored to the air. This wonderful interchange of gases between flora and fauna goes a long way towards maintaining the constancy alluded to above.

The humidity of the external air varies with the climate and season, from 40 per cent. to saturation.

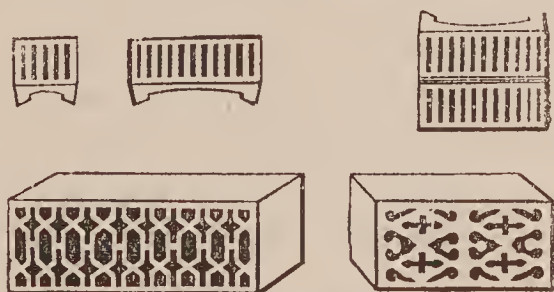
In an air space in which animals are confined the composition of the air is considerably altered, and the object of ventilation is to renew the supply. In respect of ventilation, then, the following points must be considered: (1) the provision of a sufficient and constant supply of fresh air, (2) proper means of exit for foul air, (3) the avoidance of perceptible draughts, and (4) the regulation of temperature. To effect these objects successfully it is necessary, in the first instance, to have an adequate cubic area per head. Every horse requires a floor space of 120 square feet (stall, including passage, = 20 × 6 feet), which, with a height of 12 feet, ensures a space of 1,440 cubic feet. Cattle will manage well with 900 feet, and sufficient room to lie down upon, which, by the way, is not always conceded to them.

The limit of purity in an air space is that the CO₂ shall not exceed .06 per cent. A horse adds 1.2 to 1.3 cubic feet per cent. of CO₂ per hour.

The following is a simple method of arriving at the approximate amount of CO₂ in a given atmosphere. Six clean, well-stoppered glass jars are procured, of the respective capacities of 450, 300, 250, 200, and 100 cubic centimetres, and are severally filled, by the aid

of a syringe, with the air to be examined, care being taken to avoid the collection of air direct from the lungs. The smallest jar is then made to receive 15 c.c. of lime-water, and if it becomes turbid it indicates that there are at least 16 parts per thousand of CO_2 . If the air, on the contrary, remains clear, the "200" jar is similarly inoculated, turbidity indicating the pressure of CO_2 to the amount of 12 parts per thousand, and so on. I forget precisely the authority from which I gleaned this information, but I can answer for its simplicity and accuracy. The jars indicate in sequence the following figures per thousand: 16, 12, 10, 8, 7, and 6. For all practical purposes, however, the sense of smell affords a sufficient indication of the purity of the air in a building.

The means of ventilation in stables and kindred buildings is practically limited to the abstraction and supply of air by means of *air-bricks*, *valves*, *louvres*, *air-shafts*, and *cowls*, as the induction of aërial currents by heating and lighting media is seldom if ever practicable. No constant rule can be laid down for the ventilation of stables, because so many circumstances can interfere in different cases with the harmony of our intentions. Thus, a storey above may occlude the possibility of a louvre, or the presence of an attached building prevent ventilation on one side. Theoretically, *fresh-air inlets* should be located near the ground, and *foul-air exits* at the top of a building. It is important, however, whilst complying with these rules as far as possible, to avoid placing openings in positions where they may give rise to draught. It frequently happens that air-bricks are thus misplaced. If, for instance, they are inserted under the manger, and the current which they admit is not distinctly subordinate to more important currents of air above, the horses will be in a direct draught. When properly located, however, air-bricks are most important means of ventilation, and in every stable a row of them should perforate the wall, under the *eaves* on both sides. An iron air-brick (bar-pattern), a half-brick, and a double one are shown in the accompanying figures, as well as two ornamental patterns.



AIR BRICKS.

The valve-brick, represented under these, is well adapted for stables and cowsheds. The valve, shown in section, arrests any gust of air from without.



OUTLET BRICK VENTILATOR, WITH VALVE IN SECTION.

When the conformation of a stable building renders a *louvre* in the roof possible it is a means of ventilation which should certainly be employed, and glass plates may with

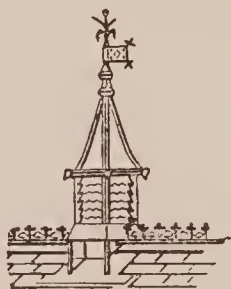
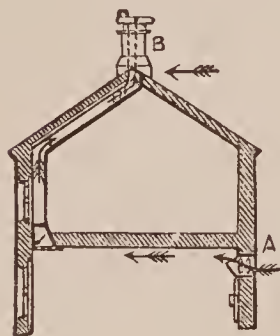
advantage be substituted for the inclined sideboards for purposes of light. Whether a louvre is present or not, small workable windows should, as suggested by Sir Frederick Fitzwygram in his



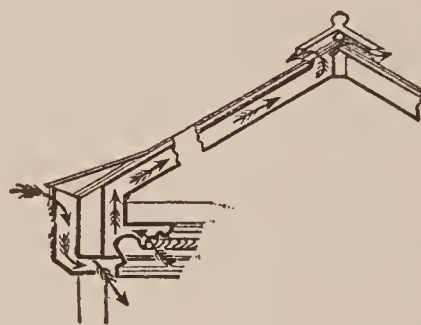
LOUVRE WITH
VENETIAN-
BLIND SIDE
PLANKS.

book, be placed above each horse's head. This author's lucid descriptions leave little to be said upon the position of doors, the construction of louvres, and other points, which are copiously illustrated by intelligible diagrams. The object of this paper is, as was before hinted, as much to suggest remedies to existing defects as to detail what is sanitarily perfect.

It is often in our power, by a little reflection, materially to improve, for the time being at any rate, even the worst surroundings; and such foresight will frequently be repaid by distinct improvement in clinical cases, which would otherwise perhaps succumb to adverse influences.



AIR SHAFTS.

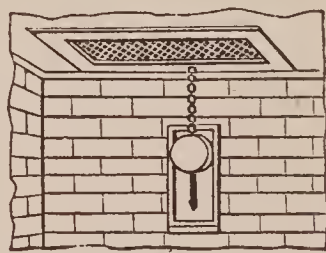


Some idea is given in the above figures of the manner in which outlet shafts are constructed. There is a fresh-air inlet at A (in the left-hand figure) by which a current is obtained which sweeps the foul air, collecting at the ceiling, up the shaft. For every horse a ventilating surface is allowed, similar to that which accompanies the type. An air-space running along between the floor of the loft and the ceiling of the stable connects these separate openings with the one shaft.

The central figure is a modified louvre receiving an air-shaft. It is essential that all shafts should be constructed, as far as possible, without bends and angles, and where any departure from the straight line is positively essential the corners should be made round and smooth.

Cowls and turrets are fixed at the top of outlet shafts, and their function is to increase the *aspirating* force. The crude idea was simply a cylindrical pipe, covered with a hollow cowl.

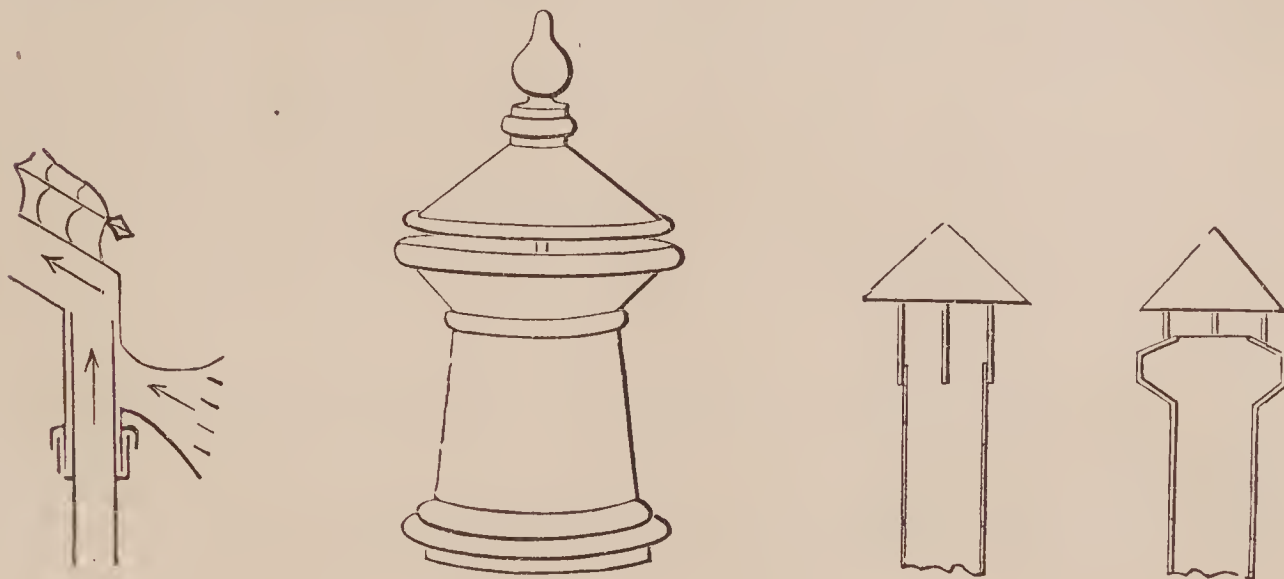
The directions of the aspirating and induced air currents are in-



SURFACE OF OUTLET
VENTILATOR, WITH
COUNTERPOISE.

dicated by the arrow-heads in the first figure. These drawings are intended to represent only some of the simpler patterns, but the patented goods are both numerous and complex.

Good light and sufficient heat are both essentials in the stable, but fresh air should not be sacrificed for warmth. A temperature, however, of 60° F. should, as far as possible, be maintained. Double roofs, enclosing an air-space, are very effectual for maintaining a mean temperature in the extremes of climate. Hot air



and water pipes answer very well for heating stable buildings, but they are expensive, both to fit and to keep going. In a large stable in York these pipes are suspended just above the horses' heads, with the result that animals standing there in the winter appear to one to be sufferers from headache; but we are debarred, of course, from subjective inquiry.

Actual combustion of coal gas and oil is a drain upon the store of oxygen which cannot be entirely overlooked, when we consider that a litre of coal-gas will exhaust the oxygen from eight litres of normal air, or that an oil lamp burning 150 grains of oil per hour produces, upon an average, half a cubic foot of carbonic dioxide.

INDIGESTION CAUSING ANTE-MORTEM RUPTURE OF THE DIAPHRAGM AND DEATH.

BY J. A. MEREDITH, M.R.C.V.S., A.V.D., MHOW, CENTRAL INDIA.

Subject.—A grey Persian gelding, aged fourteen years, troop horse H 16, 5th Lancers. Admitted to hospital at 10 p.m., March 25th, after having been observed in the troop lines to be lying down and breathing heavily. He was placed in a loose-box.

Symptoms.—Profuse sweating about the abdomen, restless, and

inclined to lie down. Slight discolouration of the visible mucous membranes. Pulse, 42; temp., 101.1°. Gave anodyne draught, Tinct. Opii ʒj, Tr. Asafoetidæ ʒj, Aquæ suff., and ordered enemas.

11 p.m. Appears easier, not violent, and remains standing in one position. Urinated and passed a little fæces.

1 a.m. Suddenly became restless and appeared in great pain. Administered Tr. Opii as before, together with Spt. Aeth. Nit. ʒj, and repeated the enemas. After this he appeared dull, lay down, and remained perfectly quiet until 4 a.m., when he got up and walked round the box, hand-rubbing.

5 a.m. Abdomen distended, general appearance very dull, prevented the patient lying down. Rectal examination caused great straining and pain; no rectal space, and some difficulty in administering enemas. Gave aperient pill: Aloes Barb. ʒv; Gent. Rad. Pv. ʒij. Pulse, 45; temp., 101°. Refused all food and water.

12 noon. Pulse, 84; temp. 103.2°. Patient quiet and remaining in a standing position. Enemas continued. Abdomen not so distended.

5 p.m. Patient appears better, and may make a recovery. Temp., 101.2°; pulse, 62. Eating a little lucerne.

10.15 p.m. Up to this time the patient had promised a recovery, but suddenly a copious stream of clearish-coloured fluid flowed from both nostrils, amounting to about two gallons; he walked round the loose-box, fell down and died instantaneously. I have never in my experience met with so peculiar an ending to a case of this description. This extensive flow from both nostrils prior to death seems so rare, that I have been induced to record the case. *Post-mortem* appearances will, no doubt, account for the very sudden death.

Unfortunately I was not present just before death, so I could not discern any important symptom which may have presented itself.

Post-mortem.—Abdomen distended with gas, and contained a quantity of serous effusion which had escaped from the ruptured vessels. Upon removing the intestines, two extensive ruptures (*ante-mortem*) were observed in the diaphragm, one extending some eighteen inches in a circular direction through the muscular portion of the right side of the diaphragm about one and a half inches from the walls of the cavity; the other rupture arose from the ziphoid appendage on the left side, and extended in an upward direction into the phrenic portion of the diaphragm. The diaphragm possessed a torn appearance upon the borders of the ruptures, and had lost its firm touch. Deep discolouration of the serous covering of the whole intestinal tract, which seemed to arise from the exudation present in the abdominal cavity. Acute Mesenteritis.

Stomach contained a large quantity of undigested gram, but the mucous coat of the intestines exhibited a most normal appearance.

Liver small, friable, and easily broken down, and jaundiced in appearance. An interesting condition existed in the thoracic cavity; adhesions of about six inches by four were present on the left lung, which was firmly fixed to the costal pleura. No record existed in the history of this horse to show that he had at any time suffered from any chest disease. The lungs and heart were pigmented. This horse never during his illness appeared in great pain, and was not inclined to lie down.

PRECOCITY IN A CALF.

BY J. ADAMS, M.R.C.V.S., WARMINSTER.

ABOUT three years ago, a calf, about 3 months old, was sucking by its mother's side, when its owner, Mr. James Lowe, saw a young bull, owned by Mr. White, his neighbour, jump over a hedge and run towards the calf. Mr. Lowe hastened with all speed to stop his progress, but before he could arrive on the scene of action, the bull had jumped the calf, and *coitus* took place as usual. Fearing the consequence, Mr. Lowe took what care of the calf that he could, but at the end of the natural term of gestation it brought forth a good bull calf—healthy, sizable, and strong—and which at the end of a year was sold for £9. The mother and calf are now both living. I should like to know whether this is not an unprecedented occurrence, as I am now over 60 years of age, and never in my practice have I ever heard of such a thing before.

Editorial.

THE USE OF HORSE-FLESH AS HUMAN FOOD.

THE sale of horse-flesh as food for mankind has long been recognised by the majority of European Governments as legitimate, and measures are in force for conducting such sale, so as to safeguard the interests and health of consumers. Attempts have been made on two or three occasions to introduce this flesh to the notice of the working classes in this country, but without effect; and the philanthropic individuals who made them, at some sacrifice of time and money, and perhaps also of feeling of sentiment, have generally received only the attention of the witlings who perpetrated jokes at their expense. One of these attempts took place a few years ago, its chief mover being M. Decroix, an ex-Principal Veterinary Surgeon of the French Army, who induced a Parisian horse-butcher to open a shop in London—in the neighbourhood of Leicester Square—where, for a short time, horse, mule, and ass flesh was exposed to the gaze of the curious and fastidious, but it found few customers. Decroix, in his cosmopolitan zeal for the good of his species, and in order to overcome our insular prejudice, even offered a prize in the shape of a gold medal, to any one who succeeded in establishing the sale of horse-flesh in England; but this reward was never applied for, for the simple reason that no one could claim it.

Prejudice and sentiment have been too powerful antagonists hitherto, in the way of popularising this article of food, and they have been so long in operation, that it will require much time to overcome them. Before the Christian era, the flesh of horses was more esteemed than that of oxen by the Northern peoples, who were only induced to give it up when they embraced Christianity, because its use was associated with paganism. Discountenanced from religious motives at first, these soon became merged in prejudice and sentimental antipathy, until now many people look upon such flesh with loathing, and would probably suffer the extremes of hunger and exhaustion before they could bring themselves to make a meal of it. And yet, as has been mentioned, it is a common article of food in many parts of the world, and there is no reason whatever why it should not be so in the United Kingdom. Darwin, in his "*Voyage of the Beagle*," shows us that in South America (Government of Buenos Ayres), the use of such meat by troops is most advantageous, mare's flesh being the only food which the soldiers have when on an expedition. He says this gives them a great facility of movement; "for the distance to which horses can be driven over these plains is quite surprising; I have been assured that an unloaded horse can travel a hundred miles a day for many days successively."

Our own troops should be accustomed to horse-flesh, for on active service it often happens that it is more plentiful than any other, and it

is always wasted because it is not usual to eat it. In the Crimea, where horses died in multitudes during the early part of the campaign, the soldiers perished of hunger and exposure; and yet it is doubtful if a pound of horse-flesh was eaten. The horse is among the cleanest feeding and daintiest of any of the consumable creatures, his flesh should be as nutritious if he is properly cared for, and he is as little liable to diseases which would render its consumption dangerous as most of them. If, therefore, this flesh can be sold at a comparatively low price, and proper precautions are adopted to ensure its being healthy, its introduction should prove a boon to those who cannot afford to purchase ox flesh, and who, stifling their sentimental objections to it, use it daily.

That there is now a desire to have it sold publicly as human food (it has doubtless been disposed of in large quantities surreptitiously for years), is evidenced by the petition recently presented to Parliament from Manchester and Salford, and which was signed by no fewer than 80,300 persons, in favour of a Bill for regulating its sale.

Such a Bill has been introduced by Mr. Knowles, the Member for West Salford, and there is every probability of its passing the Legislature. It is to be hoped that every requirement will be embodied in it, and with the experience of such countries as France to hand, there should be no difficulty in protecting the public against fraud and danger. Horses, including mules and asses, should be carefully examined by Veterinary Inspectors previous to slaughter, and even after the carcasses are dressed, and if they are satisfactory, the hoofs should be officially branded, these remaining with the carcase until it is all disposed of, in order to establish and guarantee identity. In Paris, the additional precaution is observed of leaving the skin on the carcase, as is the case with calves' carcasses in this country. But the examination of horses destined to furnish flesh to mankind must be carefully conducted on the score of public health, and this duty can only be safely entrusted to veterinary experts. Otherwise we shall have more risks attending the food supply—risks which should not exist, so far as flesh is concerned, if easily-enforced and reasonable measures were adopted.

OPERATION FOR ROARING.

THE following is an extract from the Annual Report of the Army Veterinary Department for 1888, and has special reference to operation for Roaring:—

“In my report for 1887, in alluding to the morbid condition which causes what is popularly known as ‘Roaring’ in horses, I mentioned that an attempt was then being made to abolish this serious cause of inefficiency by a surgical operation on the larynx, where the obstruction to the entrance of air to the lungs exists; and that I had reason to hope the effort would be successful. The urgent necessity for discovering some means of removing this obstruction effectively and safely has long been recognised, but hitherto endeavours to accomplish such an object have had such unfavourable results that they were discontinued. More than ten years ago I satisfied myself that there was no danger from operation in the larynx, and that the immediate cause of the Roaring might be successfully removed. Circumstances, however, prevented me from attempting this operation until the great increase in the prevalence of the affection, both in and out of the Army, compelled me to resort to it.

"In the five years from 1883 to 1887, there were 326 troop horses cast and sold because of this disability, being in the proportion of 5·6 per 1,000 of the average strength. In 1887, 61 were sold, or 5·27 per cent.; and in 1888, 73, or 7·56 per cent.; while the admissions were 187, or 1·40 per cent. of the average strength. These were horses which, owing to their distress in breathing, were unfit for further military service. Many more horses were retained, however, because, though their respiration was noisy, they could yet perform their duty. On May 1st, 1888, of 12,745 horses, 690 were so affected, or 54 per 1,000 of strength. It is probable that a larger proportion of horses belonging to civilians are suffering from Roaring, very likely 6 or 7 per cent. Medical treatment has afforded little benefit, and until operation was adopted, horses, however valuable they might otherwise be, were hopelessly depreciated, and very often quite useless because of this ailment.

"The operation resorted to has yielded very satisfactory and encouraging results. It was decided to operate only upon the most severe cases of Roaring—those which were so seriously affected as to be unfit for service, and they were selected by the veterinary surgeons of regiments and corps. As at first the operations might be considered as to some extent experiments (though they were not so in reality), they were commenced under my direction at the Army Veterinary School, Aldershot, which is licensed for experiments under the Vivisection Act, and performed by First Class Veterinary Surgeon F. Smith, who holds a licence to perform experiments. But as the Royal Horse Infirmary at Woolwich was more convenient for me than Aldershot, and as the arrangements were in every way preferable, the operations have been carried out there, and to my entire satisfaction, by First Class Veterinary Surgeon F. Raymond, F.R.C.V.S., who has shown remarkable zeal and skill in performing what undoubtedly is the most delicate operation in veterinary surgery.

"The earlier operations were, of course, not so successful in their results as those which were performed later, as everything pertaining to the procedure was novel, and knowledge had to be acquired step by step.

"Two horses operated upon early were apparently cured for about a month, but recovery was not permanent. From such failures most valuable experience was gained, and the operation and subsequent treatment have now been so perfected that the possibility of cure of Roaring has been placed beyond a doubt; while the operation itself is not only a very important addition to the resources of veterinary surgery, but has demonstrated for the first time that other diseased conditions of this part of the horse's throat, hitherto considered beyond the reach of surgical skill, can now be treated with every prospect of success. The institution of the operation has also added to our knowledge of the physiology of the larynx and adjacent parts; while it has been the means of introducing great improvement in the administration of chloroform to horses, by which rapidity in the production of, and recovery from, unconsciousness, safety to the animals, and great economy in the expenditure of the drug, have been obtained.

"Veterinary Surgeon Kay Lees, F.R.C.V.S., was temporarily transferred from Ireland to Woolwich to be instructed in the operation, in order that he might undertake it on his return to that country. Since his arrival at Newbridge, he has operated upon forty troop horses belonging to different corps; but the results cannot yet be definitely ascertained, as sufficient time has not elapsed. Of this number only one has died, death being due to Tetanus, a disease which often occurs from the most trifling injury; all the others have made excellent recoveries.

"Mr. Raymond, at Woolwich, has operated upon 103 troop horses, and, remarkable to say, has not lost one from the operation. The results are as yet only partially known, and there is every probability that they will be much

more satisfactory in 1889 than they have been in the year now under consideration, as the operation and subsequent treatment are so much improved.

"Of 7 horses belonging to the 5th Lancers (transferred to the Carabiniers), 6 have been reported as completely cured, and the 7th as having only a slight coarseness in respiration; all have been at duty for several months, and there are no signs of relapse. All were so badly affected as to be unfit for work.

"Of 9 horses belonging to the 14th Hussars, all are cured except two, which make a noise that may gradually subside. These were bad cases.

"Of 22 horses belonging to the Royal Dragoons, 15 are reported as practically cured, and 4 improved; while 3 are not improved. The 'practically cured' and improved are at their duty. These were all bad cases.

"Of 8 horses belonging to the 18th Hussars, 3 are practically cured, 4 are improved and daily improving, and 1 is not improved. The two first groups are at their duty. All were bad cases.

"Of 5 horses of the 20th Hussars, 2 are reported as greatly improved, the others as improving. All were bad cases.

"Of 4 horses belonging to the Royal Artillery, 2 were cured, and 2 were not improved.

"Of 2 horses belonging to the Army Service Corps, 1 was discharged fit for duty, the other was re-admitted for further treatment.

"A Riding Establishment horse was slightly improved, and a horse of the Remount Establishment was not improved.

"It will be seen by the above, that 35 horses operated upon were practically cured, 11 were so improved as to be rendered fit for duty, and some of them are still improving; while only 13 were not so much improved as to be fit for work.

"The result in some of the cases cured was very remarkable, the change from stridulous and distressed breathing, even at a slow trot, to easy and almost noiseless respiration after a two miles' fast gallop, being rather startling.

"Though it is somewhat premature to give a decided opinion as to the likelihood of the beneficial effects of the operation being of a permanent character, yet there is every reason to believe that they will be so. Should this prove to be the case, a great boon will have been conferred upon horse-owners, not only in this country, but throughout the world; as Roaring in horses has a wide geographical prevalence, and chiefly affects the most valuable breeds. Hitherto it has been considered incurable; now by a comparatively simple, almost painless, and certainly safe operation, the defect may be removed in at least the large majority of cases, and horses useless and suffering because of it, can be restored to efficiency and relieved from distress.

"Everything relating to this condition, and the operation, I have dealt with in detail, in a work recently published, entitled '*Roaring in Horses (Laryngismus Paralyticus)*.'"

SCARLATINA AND MILK.

At the last ordinary meeting of the Glasgow Philosophical Society, Dr. NEIL CARMICHAEL communicated the results of experiments carried on by him in connection with the outbreak of Scarlet Fever at Garnethill, Glasgow, last year. This epidemic was clearly traced by Dr. Russell to the milk of a certain farm, where were found two cows with ulcers and scabs upon their teats, similar to those described in connection with the Hendon out-

break. Both cows were desquamating freely. A calf fed on the milk of one was seized with a febrile disease, which nearly proved fatal, and which was followed by desquamation of the epidermis and of the hair. From a sample of the milk Dr. Carmichael obtained a creamy-looking mass, which consisted of micrococci, each the 40,000th of an inch in diameter, and similar organisms were found in the blood of the calf. With these organisms he made a slight, but as yet quite inefficient, attempt at inoculation. One calf inoculated had a slight febrile attack, and a little, mainly local, desquamation resulted. Dr. Carmichael succeeded in obtaining, by lime light, good photographs of the organisms.

Dr. J. B. RUSSELL remarked that, on the medical side, there had been no hesitation in accepting Klein's case as one of a high degree of probability; but the difficulty was to get the veterinary profession to look upon this as a matter worthy of consideration. It required some courage to speak in the presence of farmers and dairymaids of Scarlatina being propagated from the cow to human beings. If Scarlet Fever originated in the cow, it originated in one or other of the numerous lesions to which the teats of the cows were subject, and, until it was definitely ascertained which of them was the infectious one, the farming class should avoid using the milk of all cows suffering from such lesions.

In the annual report of the Local Government Board, recently issued, Dr. Klein continues his account of his researches into the alleged association between a certain form of cow-disease and Scarlatina. *The British Medical Journal* states that it will be generally admitted that by the evidence here brought forward he has powerfully supported the view which he enunciated in previous reports. He describes six experiments on cows which had calved three or four weeks previously. In four cases he used subcultures on solid media of streptococcus obtained from the blood or pericardial fluid of a calf experimentally infected with human "*Streptococcus Scarlatinæ*"; in two cases subcultures of the streptococcus derived directly from human Scarlet Fever. Each animal was inoculated by subcutaneous injection at the root of the ear. In all the six cases the animals developed ulcers on the teats; several of the animals had considerable fever and constitutional disturbance. Dr. Klein believes these ulcers to be among the very earliest evidences of disease in the animal. They occurred indifferently, whether the cow was being milked by hand or was suckling her calf. The teat-sores showed themselves after an incubation period of from four to nine days from the inoculation; and subsequently a more general affection of the skin was found, accompanied by more or less febrile disturbance, and sometimes by pulmonary symptoms. In the disease thus induced, a number of changes were found after death, distributed among various organs in the fashion of the changes of an acute specific disease, and exhibiting so much of constancy in their own manifestations as to make them, taken as a whole, characteristic of Cow-scarlatina. In two of the experiments the streptococcus was recovered from the milk; in one case the milk was drawn with antiseptic precautions during life, in the other it was obtained by incision after death from the deeper parts of the udder. Dr. Klein states positively that the streptococcus is not the *S. pyogenes*, and points out that the cows, having calved three or four weeks, were not in the parturient state. Dr. Buchanan, in his comments on the reports, lays stress on the fact that the sores on the teats appeared to be with difficulty, if at all, transmissible by direct inoculation from the infected animal to man. "This circumstance," he writes, "was hardly perhaps to be anticipated, seeing how readily other sore-teat diseases are so communicable, and how readily Cow-scarlatina at Hendon reproduced itself as human Scarlatina in the consumers of milk from infected cows."

Differentiation of Udder Diseases in Cows.—Dr. Klein has some observations upon the appearances by which the Hendon cow disease is to be recognised. He remarks that the term “spurious Cow-pox” had been used to include every form of udder disease in cows other than the so-called true or Jennerian Cow-pox; he claims to have now differentiated from this miscellaneous collection another disease—the Hendon cow-disease. This disease having been only lately identified, the opportunities for studying it differentially, even in its pathological aspects, have necessarily not been abundant; while still less frequent have been the opportunities for observing the clinical manifestations of the disease spontaneously occurring. Dr. Klein considers that it may be distinguished from the Wiltshire disease investigated by Professor Crookshank by the fact that in the case of the Wiltshire disease the visceral changes may be entirely absent, loss of hair is not a common symptom, the sores are flatter and more superficial and the scabs are longer adherent, and the disease is readily transmitted to the milkers. Another cow-disease from which he believes it may be differentiated is that observed in Edinburgh in 1887. The milk from the dairy where these cows were lodged had distributed a form of febrile sore throat among its customers. The sore throat could not be recognised as either scarlatinal or diphtheritic. A cow suffering from this disease was brought to London and placed at Dr. Klein’s disposal; the disease was found to produce ulcers on the teats and visceral lesions, and to be capable of inoculating calves, so that it bore a greater resemblance to the Hendon disease than did the Wiltshire disease. The inoculation experiments, however, showed that the Edinburgh disease differed from the Hendon cow-disease as regards incubation period, the development and progress of the sores, and the aspect and character of the crusts. From the ulcers of the Edinburgh disease Dr. Klein isolated four micro-organisms, but to only one does he attach any pathogenic importance. This, the *Streptococcus albus*, he considers “stands in some necessary relation to the disease.”

The *Weekly Scotsman* reports that a week ago an outbreak of Scarlatina occurred at Portobello, the cases numbering fifteen, with only one death. The fact of all the patients having been supplied with milk from the same dairy was regarded as likely to afford a reason for the outbreak, but an examination made of the animals and the milk failed to elicit any circumstances by which the outbreak could be attributed to that source. Mr. R. Rutherford, F.R.C.V.S., informs us that he was called in to examine the cows in question, thirty-two in number. They were a good lot of animals, distributed in five byres, and well cared for. Three-fourths of the number had the vesicular eruption on the teats, which is so common among newly-calved cows. This eruption was disappearing in most of the cases, only a few being recent. Mr. Rutherford had never known an instance of this disease being transmitted to the human subject, and he did not believe it was so in this case. Further, he gave it as his opinion that the same eruption would be found on cows elsewhere. Indeed, on the day when he made this statement he examined three large lots of cows in different places, and found several so affected; and he says the present is the first occasion on which the attempt has been made in Edinburgh to trace an outbreak of Scarlatina to diseased cows. There has been no increase in the cases of disease.

AN INTERESTING CASE AND HAPPY RECOVERY.

IN a recent issue of the *British Medical Journal* the editor, Mr. Ernest Hart—who has been giving a series of articles on “Parisian Hospitals, Surgeons, and Physicians”—describes the Hôpital St. Louis and its staff, the chief of which is a most distinguished surgeon, M. Péan. In enumerating the

characteristics of that great operator he mentions several most interesting cases in which success has followed some remarkable feats of skill. One of these cases has a peculiar and engrossing interest for members of the veterinary profession, inasmuch as it refers to one of its most loyal and respected members, Professor McGill, late of the Glasgow Veterinary College, and now, we believe, one of the staff of an important tramway company in the French capital, and whose chivalrous conduct at the tumultuous annual meeting of the Royal College of Veterinary Surgeons two years ago will be remembered by those who were present on that occasion. We give the description of the case in Mr. Hart's own words, heartily congratulating our esteemed colleague on his recovery, due to his good fortune in falling into the hands of such a sage and accomplished surgeon.

After recording an operation on the brain of a patient in an almost hopeless condition, and the removal of a deep-seated tumour therefrom, followed by the disappearance of all the bad symptoms, Mr. Hart says—

"Another very interesting operation was one which M. Péan had just completed on the spinal cord. The patient had been in England buying horses. In the stable, whilst he was examining the foot of one of the animals, another horse seized him by the back. He was quickly released. He had felt a little pinch of the skin, but did not pay much attention to it. He remained for three days in England. On his return he found his strength diminished. His legs failing, he could scarcely walk, and the pain in his back became intolerable; the limbs became completely paralysed; he suffered from retention of urine. M. Péan was called, and examining the seat of the bite with care, he found the skin in good condition, but at about the level of the sixth dorsal vertebra there was one spinous process more projecting than normally. With the finger he detected that the projection of the two spinous processes of the subjacent vertebræ was absent. They had evidently been seized, and driven by the horse's teeth into the spinal cord. M. Péan made a long vertical incision in the median line, the centre of which corresponded to the vertebræ subjacent to that which projected. He found that the muscles were contused along the whole length of the vertebræ. Pushing aside these muscles, he reached the spinal dura mater, which was pierced by the spinous and transverse processes as far the costal articulations. There were about ten fragments which had entered the spinal cord. All these fragments were removed, and all the unequal portions of the transverse processes were resected. The operation was completed without complication, and the patient is now restored to almost his ordinary condition. The operation was performed with a lever and small *pincers emporte-pièce*."

DOGS FOR MILITARY PURPOSES.

ON 15th March, Mr. E. E. Bennett, A.V.D., delivered a lecture at the United Service Institution, Whitehall, on the above subject, General G. Erskine, C.B., Chairman of the Council, presiding. Having referred to the use made of dogs in war in ancient times, especially by the Greeks and Romans, the lecturer pointed out that the Spaniards in Peru and Mexico, the Dutch in their wars, the English under Essex in Ireland, the Piedmontese in the sixteenth century, the French and the Turks, both in the last and in the present century, supplied many examples of the utility of dogs to an army in the field. The Russians in their recent campaigns in Asia Minor, and the French in Algeria, reaped many advantages from the employment of these canine allies, and at the present time in many Continental armies, especially the German, dogs were a recognised institution.

They can be used in a variety of ways, but, specially as *auxiliary sentinels*

to the outposts generally; as *scouts* on the march and on reconnoitring and patrol duties; as *despatch-carriers* on the march, in camp, and in action; as auxiliary *ammunition-carriers* on the march and in action; and as *searchers* for the wounded in an enclosed or wooded country, and at night or in stormy or foggy weather. The most important, however, of the foregoing is the *role* of sentinel; for it has been ascertained that well-trained dogs can detect with ease the approach of strangers, even in average weather, up to 150 to 200 yards. Sentries, therefore, supplied with dogs, would be very materially aided in their arduous duties, and the chances of successful night attacks and surprises would, by their employment, be very greatly lessened, if not altogether prevented; and, further, the tactics of such redoubtable foes as the Ghazis and Soudanese, who stealthily approach and stab sentries on their posts at night, would be entirely checked. As scouts, they would very greatly assist Infantry in an enclosed and mountainous country, and would be of service as despatch-carriers under similar conditions, and also where Cavalry could not be employed on this work, as during frosty weather, owing to the slippery state of the roads, and at night when, on account of the nature of the ground, it might be both difficult and dangerous for horses to travel. As ammunition-carriers, to supply the firing line, and also on the outward march, the dogs could carry in their saddle-bags 80 rounds of the old and 160 rounds of the new service pattern cartridges, weighing 8 lbs. As searchers for the wounded they would be specially valuable in a well-wooded district, and much suffering prevented—such as occurred in the vineyards round Metz, where the search parties failed to speedily find many that were severely wounded, and who died in consequence, either from exhaustion or long exposure.

The lecturer then went on to speak of the varieties best adapted for war purposes, selecting the farmer's sheep dog as the easiest to teach and the least prone to wander from the paths of duty, though many other breeds had much to recommend them; and, finally, in drawing attention to the methods of training, the care and treatment, and number of dogs to be employed per regiment, he concluded by referring to the *Naval* dog, which, besides being used on shore for all similar purposes to his military *confrere*, would be of immense value in detecting the approach of torpedo-boats, and also in the prevention of collisions, by giving timely notice of the whereabouts of other craft at night and during foggy weather.

ON THE LATELY DEMONSTRATED BLOOD-CONTAMINATION AND INFECTIVE DISEASE OF THE RAT AND OF EQUINES IN INDIA.

BY H. VANDYKE CARTER, M.D.LOND., BRIGADE SURGEON, BOMBAY.

(Continued from page 184.)

September.—Further trials made, and as a sample the following is quoted: After 22 hours the organisms in the centre of the preparation grouped in open spaces mostly quiescent; the thicker end is pointed, and the body shows a clear space between two bright spots; towards the margin they were more shrivelled, granular, and dotted in their whole length, excepting the flagellum itself. Red blood-discs somewhat misshapen, leucocytes quiescent and filled with granules; a few free cocci present, no bacilli. A moving monad in the centre being watched, it advanced like a worm, the attenuated end in front, and the hinder thicker end being drawn up towards the front end fixed as a kind of fulcrum: the first stage in this process is the projection of the flagellum, and the next the dragging forward of the thicker part by successive

wriggling movements not wholly sluggish; the body or thick part is distinctly granular, and contains bright particles of different dimensions and seemingly embedded in its substance. Occasionally a brief retrograde movement is noticed. Later (24 hours) the body sometimes is flattened, angular, dotted, and quiescent, the flagellum still being jerked at brief intervals; it seems as if the body becomes too heavy or is the first to fail; one or two of the bright granules are largest and connected with the angular projections. Micrococci free are present, and others apparently growing within the leucocytes. At 46 hours the monads not much altered in the centre of the preparation; the broader part is quiescent, expanded, angular, and of granular aspect; the narrow end is distinct and languidly moves at intervals. The blood-elements are hardly altered; active micrococci are seen in some places. At 76 hours all is faint, yet clear, the blood-cells not greatly changed; the monads are still visible, though shrunken, granular, and bent, with no signs of growth. At 117 hours the organisms visible, with granules in their thicker part, but no signs of spore-production; the attenuated end is clear and possibly a little swollen; red blood-discs faint, leucocytes distinct, with their granular contents. At 141 hours aspects the same, apparently some diminution of the granules in the body of the monads, with a clearness like those within the leucocytes present. Twenty-four hours later no change, except that the parts are fainter.

From my observations it might be inferred that at ordinary air-temperatures, in the absence of a continuous supply of oxygen and nutriment, these flagellated organisms do not grow in the blood; they do not, however, immediately dissolve and disappear, and the early drifting away from the centre, rigidity, and quiescence are phenomena which I know to occur with the febrile blood-spirillum of man prior to and consentaneous with a very decided growth in bulk. As to the significance of the shortening and dotting of the bodies of these monads, under the circumstances named, the alternative inferences of an incipient spore-production or of a mere plasmic degeneration would probably be decided in favour of the view of decay; yet this seems to be not absolutely certain.

Inoculation Experiments.—These were as follows: the subcutaneous injection of healthy animals with tainted blood of the rat, the animals so employed being the rat, dog, cat, horse, and monkey; also the intra-peritoneal injection of a healthy rabbit and a healthy monkey. The last-named attempt proved alone successful, but it may be useful to offer a brief record of the whole series of trials.

(a) EXPERIMENTS ON RATS.—1 and 2. A fragment $\frac{1}{16}$ square inch large of fresh blood-clot was introduced beneath the skin of the thigh of two animals with seemingly healthy blood. Second day, the blood of both preserves its normal aspect; so on the third, fourth, fifth, sixth, and seventh days. One rat now escaped; the other continued well, and was submitted to observation daily until the sixteenth day, when, the result being so far negative, it was killed and inspected without the detection of special morbid change. 3. A similar fragment of blood-clot from the heart of rat which had just died with flagellate organisms still persisting in the circulation was introduced beneath the skin of the thigh of an animal with healthy-looking blood. Evening temperature 101° ; the animal looks well: second day, morning temperature 101.8° ; the blood unchanged; e.t. 102.4° , no change and no evident constitutional irritation with this rise: third day m.t. 101.8° , *nil*: e.t. 102.4° , *nil*: fourth day m.t. 100.6° , *nil*, e.t. 101.6° , *nil*: fifth day m.t. 100.4° , *nil*, e.t. 101° , *nil*: sixth day m.t. 100.4° , *nil*, e.t. 101.4° , *nil*: seventh day m.t. 100° , *nil*, e.t. 101.6° , *nil*: eighth day m.t. 100° , *nil*, e.t. 101.6° , *nil*: ninth day m.t. 99.8° , e.t. 101.2° : tenth day m.t. 100° *nil*, e.t. 100° : eleventh day m.t. 100° , *nil*, e.t. 101.2° ; and the animal continued well for five days longer.

(b) EXPERIMENTS ON THE DOG.—1. A healthy white puppy, a month old, had a few minims of fresh rats' blood containing several monads injected in the thigh: e.t. 100.6° ; no irritation of wound: second day m.t. 100.6° ; blood unchanged; e.t. 101° , *nil*: third day m.t. 100° , e.t. 101.2° , *nil*: fourth day m.t. 99° , *nil*, e.t. 100.6° : fifth day m.t. 100.4° , *nil*, e.t. 101° : sixth day m.t. 99.6° and e.t. 100° , *nil*; and so on for five days longer. 2. A healthy black male pup was injected with similar blood; e.t. 101.4° ; nothing morbid visible in its blood: second day m.t. 101° , *nil*, e.t. 100° , *nil*: third day m.t. 99° , e.t. 101.4° , *nil*: fourth day m.t. 100° , *nil*, e.t. 101° : fifth day m.t. 101.4° , *nil*, e.t. 100.4° : sixth day m.t. 100° and e.t. 100.4° , *nil*; and so on for six days longer.

(c) EXPERIMENTS ON THE CAT.—1. A large black healthy male; e.t. 101° ; had inoculated at inner surface of thigh a minute clot of rat's blood filled with active organisms: second day m.t. 98° ; was again inoculated with a small clot from another rat just killed, which contained many monads—this being done to ensure thorough trial; e.t. 100° *nil*: third day m.t. 98° , blood *nil*, the wounds scarred; e.t. 102° ; animal feverish, but eats heartily and sites of inoculation not inflamed; a few large granule-cells observed in the blood: fourth day m.t., 98° ; nothing abnormal seen in the blood except a few large granule-cells; e.t. 101.6° ; nothing abnormal in the blood but some large plasm-particles and a few large granule-cells: fifth day m.t. 99° , *nil* e.t. 101° , *nil*: sixth day m.t. 98° , *nil*, e.t. 101° , *nil*: seventh day m.t. 99° , *nil*, e.t. 99° : eighth day m.t. 100° , *nil*, e.t. 101.6° : ninth day m.t. 99° and e.t. 100.6° , *nil*: for five days longer the temperature remained normal. 2. A healthy fawn-coloured small cat; e.t. 101.4° ; had inoculated in the thigh on point of scalpel a minute clot of blood from a rat which contained the monads: second day m.t. 99° ; blood unchanged; e.t. 100.2° ; white cells, many in the blood, which seemed poor in quality: third day m.t. 99° , *nil*, e.t. 100.6° , *nil*; white cells many: fourth day m.t. 99° ; only leucocytes and small plasm-particles unusual; e.t. 101.6° ; leucocytes and large plasm-particles: fifth day m.t. *nil*, blood healthier-looking; e.t. 99° , *nil*: sixth day m.t. 99° , *nil*, e.t. 101.6° , *nil*: seventh day m.t. 98° , e.t. 103° ; animal feverish, in its blood nothing unusual, but many white cells and no other apparent cause of the fever: eighth day m.t. 100.4° *nil*, e.t. 100.6° : ninth day m.t. 200.4° and e.t. 101.4° , *nil*: for five days longer the temperature normal.

(d) EXPERIMENTS ON MONKEYS.—1. A small fresh-brought healthy animal; had at 10 a.m. injected m. xx of infected blood of rat just before killed, on each side of thighs; temperature 102° ; at 5 p.m. t. 103° ; nothing abnormal seen in the blood; wounds unchanged; animal quiet: second day m.t. 100.4° ; nothing abnormal in the blood; e.t. 101.6° , *nil*: third day m.t. 101° and e.t. 102° ; no visible change in blood, but animal seems oppressed: fourth day m.t. 100° , *nil*, e.t. 101.4 , *nil*: fifth day m.t. 100.6° ; nothing unusual in the blood, but some granule-cells; e.t. 101.8° ; nothing but some plasmic particles: sixth day m.t. 100.4° , *nil*, e.t. 100.4° , *nil*: seventh day m.t. 100° , *nil*, e.t. 101.8° , *nil*: eighth day m.t. 99° and e.t. 101° : ninth day m.t. 100° , *nil*, e.t. 101° : tenth day m.t. 100.4° and e.t. 101° , *nil*; and for five days more temperature remained normal.

2. A larger monkey, healthy as regards temperature and blood; had injected m. xx of fresh-drawn blood of rat containing many monads; e.t. 101.6° ; its blood unchanged: second day m.t. 99° , *nil*, e.t. 101° , *nil*: third day m.t. 99° , *nil*, e.t. 101.6° , *nil*: fourth day m.t. 100° , e.t. 101° , *nil*: fifth day m.t. 100° , *nil*, e.t. 101.6° , *nil*: seventh day m.t. 100° , *nil*, e.t. 100.6° : eighth day m.t. 99.4° and e.t. 100° , *nil*: for five days longer a normal temperature.

These observations were made by myself in the month of February.

(e) EXPERIMENTS ON EQUINES.—These I was unable to carry out, personally, but considering it particularly desirable to ascertain if the seemingly harmless rat-infection could be communicated to the horse, in which animal

an apparently similar parasitism of the blood is attended with the symptoms of serious illness, I forwarded on different occasions, towards the close of 1885, several Bombay rats, having the hæmatozoon in their blood, to my friend Mr. J. H. Steel, A.V.D., then at Poona, in the Deccan, with a request that he would be good enough to inoculate horses, as occasion offered, with the blood of these rats, in the same manner as had been successfully done in Burma with the blood of equines suffering from the "Surra" disease. And in January, 1886, I received an interesting record, from which the following extracts are made:—

(1) At mid-day infected rat's blood mixed with water was injected subcutaneously in the region of the neck and also into the peritoneal cavity of a horse, about 80 minims being injected at each site; at 2.20 p.m. temperature 101.9° , and no organism detectable in the horse's blood; next day there was observed a diffuse, painful, hard swelling at both sites of injection, and the patient seemed a little feverish and excitable; these symptoms subsided, and the animal was subsequently lost sight of.

(2) An aged horse had inoculated subcutaneously some infected rat's blood mixed with water; tumefaction occurred at the site of inoculation, and no other result is mentioned.

(3) The blood of a rat mingled with lukewarm water was injected subcutaneously in a mare and a pony. The mare received 80 minims in front of the right shoulder: on the following day marked swelling was perceptible at the spot, which, however, speedily declined until hardly perceptible on the ninth day; slight irregularities of the temperature were noted on two occasions, and up to the nineteenth morning, when observation ceased, no spirilloid could be found in the mare's blood, which had been daily inspected; some weeks later the animal continued in good health. The pony received at several punctures in the neck altogether about 90 minims of mixed rat-blood and water, and for the nineteen days ensuing there were noticed only some slight perturbations of temperature, slight swelling at the sites of inoculation, subsiding on the fourth day, and an absence on each day of any visible contamination of the blood of the pony, which some weeks later continued in good health.

(4) A chestnut pony mare in good condition received in each jugular vein about 65 minims of blood from a rat, mixed with tepid water, this blood teeming with very active organisms: a smart rise of temperature occurred seven hours afterwards; there was no local swelling, and no parasite could be detected in the blood of the pony on the first, second, third, fourth, and sixth day of experiment, nor at a later date was any positive result communicated.

Regarding these trials ending thus negatively, Mr. Steel remarks that "although the amount of rat's blood used in each case has been very small, it is to be remembered that an equal amount of blood from an infected mule would convey the 'Surra' disease to a healthy mule by either of the methods of administration adopted."

(f) In September, 1885, I made the following essays of intra-peritoneal inoculation, the subcutaneous method having hitherto failed. Rat's blood containing numerous monads promptly taken from the heart and diluted with an equal part of warmed salt-solution was introduced by syringe to the amount of 5 minims into the peritoneal cavity of a rabbit and a monkey whose blood was previously ascertained to present normal aspects.

(1) Rabbit, young; e.t. 101.6° : second day, m.t. 100.4° ; no change in the blood twice examined; e.t. 102.2° ; animal seems irritated, its blood unchanged: third day, m.t. 100.4° , *nil*, e.t. 102.6° , *nil*: fourth day, m.t. 101.4° , *nil*, e.t. 101° , *nil*; fibrine and white cells scanty: fifth day, m.t. 100° , *nil*, e.t. 101.4° , *nil*: sixth day, m.t. 100° , *nil*, e.t. 10° , *nil*: animal lively: seventh day, m.t. 101° , *nil*,

e.t. 102° : eighth day, 100.6° *nil*, e.t. 101.8° : ninth day, m.t. 100.4° *nil*, e.t. 101.6° : tenth day, m.t. 100.4° , *nil*, e.t. 100.4° : eleventh day, m.t. 100.4° , *nil*, e.t. 101.4° : twelfth day, m.t. 100.2° , *nil*, e.t. 101° : thirteenth day, m.t. 100.4° , *nil*, e.t. 101.6° : fourteenth day, m.t. 100° , *nil*, e.t. 101° : fifteenth day, m.t. 99.8 , *nil*, e.t. 100° : sixteenth day, m.t. 99.6° , *nil*; and for a few days longer similar negative results.

(2) A small monkey (*Macacus radiatus*), with healthy aspect and blood; m.t. 101° ; possibly not all the injected material reached the peritoneal cavity, as the blood had coagulated, and it may have been blood-serum chiefly which penetrated deeply. Second day, m.t. 100° ; eighteen hours after experiment the animal seems well, no local swelling, but abdomen slightly tender at site of puncture to the right of the navel; in the first sample of blood taken from a digit two monads were detected very actively moving, and otherwise presenting all the aspects of the hæmatozoon seen the day previously in the rat; they kept near to each other, and were long watched; temperature at 1 p.m. was 100.6° ; at 5 p.m. t. 102° ; another active organism was seen in a fresh specimen of the blood from another digit; t. at 9 p.m. 100° : third day, m.t. 101° ; a specimen of the blood now taken showed a single active monad; at 1 p.m. t. 100.6° ; at 5 p.m. t. 102° ; a flagellate organism like that of the rat was again found in the blood, as before; at 9 p.m. t. 100.2° : fourth day, m.t. 101.4° ; I failed to detect any parasite; e.t. 101.6° ; no parasite seen, but much plasmic matter (?) and many white cells; at 9 p.m. t. 99.6° : fifth day, m.t. 100.4° , *nil*, e.t. 102° ; plasmic particles small, many; at 9 p.m. t. 100° : sixth day, m.t. 100.6° , *nil*, at 1 p.m. 100.4° , at 5 p.m. t. 101° , *nil*, at 9 p.m. t. 100° : seventh day, m.t. 100.4° , *nil*, e.t. 101.6° , and later 99.6° : eighth day, m.t. 100.2° , *nil*, but many plasmic particles, e.t. 101.4° and 99° : ninth day, m.t. 100.4° , *nil*, e.t. 101.4° and 99.6° : tenth day, m.t. 100.2° , *nil*, e.t. 102° , *nil*, at 9 p.m. t. 100° : eleventh day, m.t. 100.8° , e.t.s. 101.6° and 99.6° : twelfth day, m.t. 100.4° , *nil*, e.t.s. 101.6° and 99.4° : thirteenth day, m.t. 100.4° , *nil*, e.t. 102° , *nil*; at 9 p.m. t. 100° : fourteenth day, m.t. 101° , *nil*, e.t.s. 102° and 99.6° : fifteenth day, m.t. 100.4° , *nil*, e.t.s. 101.6° and 99.8° : sixteenth day, m.t. 100.4° , *nil*, e.t.s. 101.6° and 100° : seventeenth day, m.t. 100.4° , *nil*; and subsequently this animal long remained well.

SUMMARY OF EXPERIMENTAL RESULTS.—Of fifteen varied trials, one furnished decided positive results, and the chief object I had in view was thus attained. Records are detailed here for the guidance of future investigators; and the conditions of effective inoculation being probably complex, some amendments in the methods above used will doubtless suggest themselves. Culture of the inoculated blood seems a promising means, varied at discretion. Respecting the successful result in the monkey, to all appearance the organism newly visible in the blood was identical with those before found in the rat; and I calculated that if there were no more than 3 ounces of blood in the monkey and only two monads in a drop, there might have been about 3,000 of these organisms circulating on the second day after inoculation, with a probability of the total being really larger. It did not seem quite certain that a reproduction of the rat's organism had taken place in the circulation of the monkey; but possibly this was so to a very limited extent. By experiment it is known that on mixing tainted blood with healthy mule's blood, or that of healthy bullock or goat, the organisms are not at once rendered quiescent or killed. (Steel.)

Having now given the data acquired in Bombay, I proceed to compare them briefly with other information, including the material sent to me by Mr. Steel from British Burma.

For valid inference it was obviously needful to ascertain the sameness of the things under comparison. This might be done either morphologically or biologically; and one striking feature of the present instance consists in its

offering an apparent discrepancy in these two respects, which, so far as I know, is unique in the annals of experimental pathology.

First, as to the morphology of the hæmatozoon. Judging from description, there can be no doubt that the organism found in Bombay is identical with that detected by Lewis in Bengal, such inference being confirmed by the micro-photographs appended to the Calcutta Memoir of 1879 and the remarks and drawings in Dr. Lewis's "Further Observations," London, 1884. Here I may note also the very close similarity (at least) of the Indian hæmatozoon with that of the German "hamster" described by Wittick and illustrated by excellent photographs, with a comment in Koch's well-known article, *Mittheill, a. d. Konigl. Gesund. amt., Band. 1* (Berlin, 1881.) And not less evident is the identity therewith of the London flagellate protozoa more recently described and illustrated by Dr. E. M. Crookshank, l. c. 1886. I am not acquainted with other details (if any), published in India or elsewhere, respecting the seemingly non-pathogenic hæmatozoon of rodents; but the above concurrent testimony is sufficient to establish the wide prevalence, as well as identity, of this species of blood-parasitism.

Adverting, next, to the pathogenous equine-form, my observations date from the beginning of 1885, on the receipt from Rangoon of Mr. Steel's dried specimens of blood of the naturally diseased mule, and the artificially infected mule, dog, and monkey, taken at different periods of illness. The preparations arrived at Bombay in fair condition, and were successfully stained with methylene blue, methyl-violet, and fuchsine. After careful and repeated scrutinies, I arrived at the conviction that no essential difference in aspect existed between the organisms present in the natural and the acquired disease, nor between either of these sets and the common rat-infection. Learning subsequently that Dr. Lewis had arrived at a similar conclusion, as regards the hæmatozoon of Calcutta rats and of the Punjab "Surra" mule disease, as well as of a dog infected therefrom, my notes were allowed to stand over. Dr. Crookshank has since demonstrated that the organism from the Punjab entirely corresponds in aspect to that found in London rats. Lastly, Mr. Steel having become well acquainted with the Bombay organisms in the fresh state, is also of opinion that their aspect is identical with that of the parasites in fresh "Surra" blood as seen in Burma. More recently still the equine malady and its hæmatozoon have been detected by the same observer at Poona, in the Deccan; so that India is the seat of a widespread and very serious equine disease, having for one of its characteristics a blood-contamination seemingly identical with one largely prevalent amongst common rodents of the country. Other countries may be in the same predicament.

The several links in the above chain of identifications seem nearly equally strong and connected; for observers have been competent, and in itself the hæmatozoon is peculiar enough to be readily recognised, having in each of the instances quoted preserved a similarity of form, dimensions, structure, and movements which seems never to have surpassed the limits of a possible normal or incidental variation. In both rodent and equines the numbers visible at a time, their relation to the ordinary blood elements, changes on keeping and behaviour with reagents, have been also practically identical, the entire evidence being as valid as that commonly accepted when widely separated observations are inter-compared. I doubt, indeed, if by simple inspection the infected rat's blood could be distinguished certainly from that of the "Surra" mule, dog, or monkey. This is not to affirm that no visible differences actually exist, but that in each instance characteristics have been maintained amidst differences not more frequent or considerable than might be anticipated from the varying conditions of observation.

Secondly, as to biological aspects. The vital properties of the blood-parasite as concerns the organism itself will be alluded to under the next

heading ; and respecting its influence upon the state of the infected hosts, both rodent and equine, the following remarks are offered. As regards rats, the testimony of Lewis and Crookshank has been concurrent with my own experience narrated above, being to the effect that the health of the infected rodent does not seem impaired either generally or specially, as contrasted with that of other captured rats whose blood was free from visible contamination. I further ascertained that no alterations of temperature occurred with the presence, sudden disappearance, and absence of the hæmatozoon. Apart from the general nutrition, no special function seemed disturbed ; and at autopsies no particular organic lesion was noted. When infected rats died spontaneously it was not differently or more obscurely than happened in the case of the non-infected similarly deceasing. On the other hand, the entire history of any individual not being known, it was not certain that a true normal standard of comparison had been available ; moreover, the first entry of the parasites into the blood was never witnessed, and the influence of repeated infection was not learnt ; in such small animals blood-observations were necessarily limited in number and volume, and much may have been overlooked ; moreover, as to sickness and disease, the inevitable daily manipulations and punctures, added to injuries inflicted during capture, constraint, and change of diet, would of themselves cause a disturbance of the system possibly interfering with a correct diagnosis ; and, in sum, I was not disposed to regard my own results as final.

In his comment on the infected hamster, Dr. Koch, noting the occurrence of spontaneous sickness and death, with on autopsy no lesion in explanation, insists rather upon the contaminated state of the blood ; nothing, however, is said of comparison with non-infected animals dying in confinement, or of experimental inoculations. Results being so far negative, there is next to state that mere obscurity of symptoms and lesion does not preclude the possible existence of a veritable blood-poisoning, the biological proof of which would be the artificial infection of a healthy animal of the same or near species. As regards healthy rats, according to my experiments these did not suffer by inoculation with the tainted rat-blood hypodermically made ; nor did cats, dogs, or monkeys ; nor did the rabbit inoculated through the peritoneal sac, nor the horse as tested by Mr. Steel in both these methods and also by intra-venous injections. In not one of these instances was there any communication to the healthy animal of either visible or occult blood-contamination, as proved by the unaffected general state of the recipient and by the absence in its blood of an organism like the rat's hæmatozoon. Here the last of my experiments on the monkey by intra-peritoneal injection possesses a special significance, since it demonstrated that the hæmatozoon which seems innocuous to the rat is also harmless to the monkey, so far as may be judged from a single datum carefully acquired.

Adverting now to the biological properties of the same blood-parasite as manifested amongst equine animals (also the camel), and in the dog and monkey when inoculated from equines, a notable difference becomes apparent. Thus it has been found by Dr. Evans and Mr. Steel (and since by Mr. Gunn, A.V.D.) that in the horse and mule the presence of this hæmatozoon is constantly and exclusively accompanied by a serious general disorder, which in its symptoms is more or less protracted and emaciating, at intervals febrile, icteric, and hæmorrhagic, intractable by remedies, and in its termination fatal, without the production of any strictly pathognomonic lesion excepting that of the blood. Observers agree that this malady is not contagious or infectious in the ordinary sense : naturally occurring it is endemic, seasonal and limited, so far as appears, to the horse, mule, and camel ; it may prevail extensively, and has been popularly recognised by various names, of which " Surra " is one, that of " Equine Relapsing Fever " being a designation proposed by my friend Mr. Steel

(see below). From the statements made it follows that the disease is a general one, not less characteristic in its symptoms than in its visible blood-contamination; and though not naturally communicated by contact or proximity, both these features may, I next note, be artificially reproduced by inoculation of the infected blood hypodermically and otherwise in other healthy animals. On this point the data are concisely as follows: Dr. Evans's transmission of the disease to the horse by subcutaneous injection (2) and through the stomach (2), to the dog by subcutaneous injection (1) and through either mother's milk or stomach (1 experiment); Mr. Steel's transmission to the mule (several times) and pony (1) subcutaneously and by stomach, to the dog subcutaneously (1), and to the monkey also (1). To this list may be added inoculation of the dog (1), with reproduction of the hæmatozoon, by Mr. Gunn, A.V.D. (*Quar. Jour. of Veter. Science in India*, No. 19, page 240, April, 1887).
(*To be continued.*)

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD APRIL 3RD, 1889.

Professor PRITCHARD, President, in the chair.

PRESENT.—Professors J. Wortley Axe, Brown; Dr. George Fleming; General Sir Frederick Fitzwygram, Sir Henry Simpson; Messrs. Thos. Briggs, J. S. Carter, B. Cartledge, J. Roalfe Cox, E. C. Dray, Thos. Greaves, W. F. Mulvey, Jas. F. Simpson, Peter Taylor, Wm. Wilson, Wm. Woods, F. W. Wragg; Mr. Geo. Thatcher, solicitor; and the Secretary.

The SECRETARY read the notice convening the meeting.

Mr. DRAY moved, "That the minutes of the previous meeting be taken as read."

Mr. PETER TAYLOR seconded the motion.

The minutes were then confirmed.

Absentees.

The SECRETARY stated that he had received letters from the following gentlemen, regretting their inability to attend the meeting:—Messrs. Barford, Simcox, Perrins, McCall, Walley, Campbell, and Whittle.

Portrait of Mr. Carlisle.

The SECRETARY stated that letters had been received from Mr. Donald, the President of the Border Counties Veterinary Medical Society, and from Mr. Campbell, asking the Council to accept an oil painting of Mr. Joseph Carlisle, M.R.C.V.S., executed with a view of presenting it to the Council to be suspended in its chamber.

On the motion of Mr. CARTLEDGE, seconded by Mr. J. F. SIMPSON, the matter was referred to the General Purposes Committee.

Presentations.

The SECRETARY said that two publications had been received from Dr. Fleming; one was a report on "African Horse Sickness," and the other was a work upon "Roaring."

On the motion of Mr. DRAY, seconded by Mr. PETER TAYLOR, a vote of thanks was unanimously accorded to Dr. Fleming for his presentations.

Right-of-way.

Mr. PETER TAYLOR asked the President whether he had passed through

the back door within the last month with a view of maintaining their right-of-way.

The PRESIDENT said that he had done so.

Report from the Committee appointed to arrange the Annual Report.

The SECRETARY read the report.

On the motion of Mr. DRAY, seconded by Mr. PETER TAYLOR, the report as amended was agreed to.

Mr. J. F. SIMPSON said he presumed that any matter of importance that occurred that day would be included in the report.

The PRESIDENT assured Mr. Simpson that it would.

Report from the Finance Committee.

The SECRETARY read the report.

Mr. DRAY moved, "That the report of the Finance Committee be received and approved of by the Council, and that cheques be drawn to meet the liabilities."

Mr. WRAGG seconded the motion, which was agreed to.

On the motion of Mr. WILSON, seconded by Mr. DRAY, the report was adopted.

Report from the Registration Committee.

The SECRETARY read the report.

Mr. PETER TAYLOR moved, "That the recommendation of the Committee be accepted, and that the person mentioned in the report be suspended for a time."

Mr. THATCHER (solicitor) said that unfortunately the matter could not be dealt with. There must be twenty members of Council present, whereas there were only eighteen. The matter will have to be postponed until the next meeting.

On the motion of Mr. WILSON, seconded by Mr. PETER TAYLOR, the report, with this exception, was adopted.

Report from the Bye-laws Committee.

The SECRETARY read the report.

On the motion of Mr. CARTER, seconded by Mr. GREAVES, the report was received.

Mr. J. F. SIMPSON said it would probably be within the recollection of the President that after the close of the Bye-laws Committee meeting he applied for permission to see the minutes. That permission was granted. He looked at the Committee book, but failed to discover any minutes. He, however, had his own recollection of what took place. He had happened recently to be at the College, and the Secretary reminded him of his permission to look at the minutes. On doing so he found the report presented to the Council that day. As a member of the Bye-laws Committee, to put it mildly, he could only say that what was reported there was not what he recollected. He distinctly remembered General Sir Frederick Fitzwygram writing a proposal on a slip of paper. Sir Frederick Fitzwygram had to leave the Committee meeting, and on doing so said, "I am opposed to alterations of the Bye-laws unless they are absolutely necessary." His (Mr. Simpson's) recollection of what took place was that that was put to the meeting, but not carried. Again, in the report it was stated that Sir Frederick Fitzwygram proposed that the names of the Vice-Presidents should appear in italics. It so happened that Sir Frederick was not in the room when that proposal was made. Further, there was a proposition of Mr. Wragg's that the Vice-Presidents should be left out altogether. He (Mr. Simpson) so disapproved of that, that he spoke rather warmly on the matter, because he thought that

the Vice-Presidents were in every respect members of Council; and after a consultation with Mr. Barford he proposed that the names of the Vice-Presidents should appear in italics on the notice convening the annual meeting. The sum and substance of his remarks was that those proposed alterations were put before the Committee, but that not one of them was accepted by it. When the Secretary showed him the minutes he at once took exception to them, and said, "They are utterly wrong from beginning to end." There were other members of the Committee present at that Council meeting, and perhaps they would give their views upon the subject.

Mr. PETER TAYLOR thought that if the report was inaccurate it ought to be sent back to the Committee.

Mr. GREAVES said his recollection of the matter was that as the bye-laws had been so recently gone through it was altogether undesirable to alter them.

General Sir FREDERICK FITZWYGRAM, in reply to Mr. Simpson, said that his recollection was that the alteration with regard to the nominations was carried. He was opposed to it, and he tried somewhat to emasculate the proposal by suggesting that where there was more than one nominator the person nominated should select his own nominee. On leaving the meeting he had said that in his view alterations unless absolutely required were undesirable.

The PRESIDENT said that his memory fully bore out what had just fallen from Sir Frederick Fitzwygram.

Mr. WRAGG observed that it was his recollection that the alteration in the bye-law was agreed to.

Mr. MULVEY remarked that he had gone away with the impression that the Committee was of opinion that no alteration was desirable.

Sir HENRY SIMPSON said that as he was not on the Bye-laws Committee he had no opportunity of knowing what took place. The tendency of the present day was to allow everybody to do much as they pleased in the matter of elections, and he did not see what there was to prevent a man being nominated by half-a-dozen people. It was not, he thought, a matter which was worth fighting about. He maintained that any member had a right to send in a nomination, and that the nomination should appear on the voting-paper. The best plan would be to meet the proposal with a negative, and to move that the report of the Bye-Laws Committee be not adopted; it need not be referred back to the Committee.

The PRESIDENT said that was the only way of dealing with the matter.

Sir HENRY SIMPSON said that in that case he would move as an amendment that the report be referred back to the Bye-laws Committee.

Mr. PETER TAYLOR seconded the amendment.

Mr. J. F. SIMPSON moved as another amendment that the portion of the report of the Bye-laws Committee referring to the arrangement of the Vice-Presidents' names be the only portion adopted by the Council.

Dr. FLEMING said the Council could not adopt a fragment of a report. It must be either wholly adopted or referred back to the Committee.

Sir HENRY SIMPSON's amendment that the report be referred back to the Committee was then put and carried.

Mr. MULVEY moved that Sir Henry Simpson's name be added to the Bye-laws Committee.

The PRESIDENT ruled the motion out of order, the Committee having already dealt with the report.

Dr. FLEMING thought it unadvisable at present to alter the composition of the Committee.

The PRESIDENT said that when the resolution came forward at the proper time he would deal with it as it deserved.

Recommendations to the Council.

Mr. J. F. SIMPSON moved, "That the Secretary be instructed to place the names of candidates for election to the Council of the Royal College of Veterinary Surgeons in alphabetical order upon the voting-papers. This instruction shall apply to the forthcoming and all succeeding elections." For many years, he said, the arrangement of the names upon the voting-papers had been a matter of chance, a sort of "run as you please." Last year some attempt had been made at adopting some system, which was that the names of the candidates should appear on the voting-paper in the order in which they were elected. It was not necessary to frame any bye-law for the purpose. All that was necessary was to give the Secretary some instruction, and in his opinion the Council could not adopt a better system than that of putting the names in alphabetical order.

Professor J. WORTLEY AXE asked what was the object of such an instruction.

Mr. J. F. SIMPSON said it was for the guidance of the present and future Presidents, and to avoid the possibility of any President being blamed unnecessarily for arranging the names in the order in which he, in his discretion, might place them.

Dr. FLEMING said he did not see what difference it made whether a man was at the top or the bottom of the list. It was a very poor compliment to the intelligence of the profession to think that they would vote for the first name on the paper. Whether a man stood at the top or the bottom of the list, if he were a proper man he stood an equal chance of election, and he thought it was scarcely worth while to alter the present arrangement.

Sir HENRY SIMPSON seconded the motion. He thought there were very good reasons why some decision should be come to by the Council. Up to last year there was a bye-law which said that the names of the candidates must be proposed in the Council. Sometimes they were put down in that particular order, and sometimes they were not. That bye-law had been swept away, and the profession had a perfect right to send in names whenever they chose up to a certain day. The question was when the Secretary received those names what was he to do with them. Last year he had directed that the names should appear *seniores priores*, and they were returned to the Council accordingly. He had acted with the greatest good faith, and did not believe that he had done a scintilla of wrong to any one; but he was excessively astounded when by the aid of some gentlemen who were members of the Council he had been held up as a man unworthy of credit, an anonymous circular having been sent round to every member of the profession branding him as a dishonourable man. The Council were now asked to allow the names to appear in alphabetical order. If that plan were adopted it would do away with a great deal of difficulty. There were some gentlemen who lived within a few miles of the College, and he assured the Council (he said it with a great deal of regret) that there had been a great deal of wire-pulling in connection with the elections, and there would still be so if the Council permitted the thing to be done in the haphazard manner in which it had been done in previous years.

Mr. PETER TAYLOR said that for forty-five years the Council had been in the habit of receiving the nominations and handing them down to the different bodies of veterinary surgeons throughout the country according to the order in which they were received by the Secretary. He could not see why that plan should be deviated from, and he would propose as an amendment "That as the Secretary receives the names so shall they be entered upon the voting paper."

Mr. GREAVES seconded the amendment.

General Sir FREDERICK FITZWYGRAM said that to his mind the whole matter was immaterial, but when they could by a very trivial alteration lessen the grievances and dissatisfaction which had occurred he thought the Council would do wisely to adopt Mr. Simpson's proposal.

Mr. PETER TAYLOR observed that in order to maintain harmony in the Council he would withdraw his amendment.

The motion was then put and agreed to.

Mr. J. F. SIMPSON said the next proposition he had to submit to the Council was "That the Registrar be instructed to proceed with the work of revising Register No. 1 forthwith, under power given him for that purpose by Section 5 of the Veterinary Surgeons Act, 1881." The work in connection with the revision of Register No. 3 had been well carried out by Mr. Hill, with the assistance of the Solicitor, and he thought that the revision of Register No. 1 should now be proceeded with. There were a large number of members that circulars and letters failed to reach. It might be thought that it be left to the discretion of the Registrar in proceeding with the work whether he should assume that all the returned circulars were from men who were dead or had ceased to practice. He hoped that the revision would be finished in time for the Register which would come out in 1890.

Mr. BRIGGS seconded the motion.

The PRESIDENT asked whether the Council did not think that the matter should be referred to the Registration Committee.

Mr. J. F. SIMPSON contended that it should not be so referred.

The PRESIDENT said that the only way of dealing with the matter would be to send a circular to every member of the College.

Mr. J. F. SIMPSON said that it would only be necessary for the Registrar to commence by communicating with some four or five hundred people. The names of the men on the voting papers which were returned through the Dead Letter Office would be those with whom to communicate. He did not mean to say that because a man did not return his voting-paper the Registrar was to communicate with him.

Mr. THATCHER said that it would be against the spirit of the Act to send to every member of the College, but he thought that some such suggestion as that of Mr. Simpson's might be adopted.

Sir HENRY SIMPSON said he should imagine that on many occasions when voting-papers had come back the Registrar had reasons to believe that members were either dead or had ceased to practise, and it was as well that those names should be removed from the Register. Of course it was not necessary to go about the matter in a wholesale fashion.

Mr. GREAVES, in supporting the motion, said he thought the Council would do well to adopt it. He was continually being told that the present condition of the Register was anything but satisfactory. The whole thing might be remedied at a very little expense.

Dr. FLEMING thought the object of the motion was a very good one. The voting-papers which were returned would, he said, be a very good basis upon which to work, and he would suggest that they be retained so that the Registrar could act upon them, and have circulars sent out according to the Act of Parliament.

The motion was then put to the meeting and carried.

Mr. WILSON said that as the new County Councils were now coming into power he would suggest that a copy of the Register be sent to the clerk of each County Council throughout England. It was most desirable that the local authorities should know who were properly qualified veterinary surgeons and who were only registered practitioners.

Mr. CARTLEDGE, in seconding the motion, said he thought the matter was

one of great importance. Hitherto they had hidden their light under a bushel, and now that such an opportunity arose the College should no longer be quite so modest as it had been.

Mr. J. F. SIMPSON remarked that the Finance Committee had decided that the proposal made by Mr. Wilson should be a recommendation to the Council.

Professor BROWN said that under the new system the Council might reckon that something like four hundred registers would have to be sent out in Great Britain alone. He would forward a list to the Secretary.

Mr. CARTLEDGE said that the College had the money at the bank, and he did not know that it could be expended to a better purpose than sending out Registers in the way suggested. The Registers would be referred to on many occasions, and a matter of £50 or £60 ought not to stand in the way.

Professor BROWN said that frequently communications were received from the local authorities, stating that they had appointed some one as Veterinary Inspector. It was the duty of one of the clerks to see what the qualifications of the individual were, and it was constantly found that he had none at all. The authorities had no means of knowing the qualification of men without referring to the College Register.

Sir HENRY SIMPSON said he thought Mr. Wilson's proposition would be a legitimate advertisement. The Registers this year had cost 3s. 6d. a-piece, and a bill had just been passed for new type. He contended that they paid too dearly, especially as they had purchased the type. That was old-fashioned business, and if the Council were going to give away 400 Registers he would suggest that estimates be obtained from some enterprising firms like Waterlow's or Spottiswoode's.

Mr. WILSON said that with regard to the question of expediency in the matter, if it was to be of any good, the quicker the Registers were sent out the better, because appointments would be made very shortly.

Sir HENRY SIMPSON asked Mr. Wilson to alter his resolution in the following manner:—"That a Register be sent to each local authority in the United Kingdom under the County Councils' Act, and that tenders be obtained and submitted to the Finance Committee at the earliest possible moment, and that they be instructed to accept the tenders or any tender they think desirable."

The PRESIDENT observed that if the Registers were to be sent out quickly surely the type already standing could be dealt with quicker than having it all re-set.

Dr. FLEMING thought the Council ought to arrive at some information as to the cost of the Register; 3s. 6d. was an enormous price.

General Sir FREDERICK FITZWYGRAM, in fairness to their present printers, reminded the Council that the cost per copy varied with the numbers required. Only 200 copies were printed on the last occasion. If 400 copies were printed they would not have to pay at anything like the rate they should pay for 200.

Mr. BRIGGS observed that there was no necessity to publish the Act of Parliament and the Bye-laws.

Mr. WILSON then moved the following amended resolution: "That a copy of the Register from page 103 to page 269, with a copy of the Act, be sent to the local authorities in Great Britain, and that tenders be obtained and submitted to the Finance Committee, who shall have power to accept such tender as they think best."

Mr. J. F. SIMPSON moved as an amendment: "That intimation be given to the members of the profession that Registers can be obtained from the College by those veterinary surgeons who desire to send one to their local

authority," and then going on with the latter part of the motion. He thought £100 was a tremendous amount of money for the Council to vote away.

Mr. WILSON said he did not anticipate that the cost would be anything like £100, or even £50.

There being no seconder to Mr. Simpson's amendment, the PRESIDENT put the motion to the Council, which was carried.

Obituary.

The SECRETARY read the obituary list.

Nomination of Scrutineers.

On the motion of Mr. CARTLEDGE, seconded by Mr. WOODS, it was agreed "That the same gentlemen who officiated last year be asked to act as scrutineers this year."

Mr. J. F. SIMPSON asked what were the names of the candidates for the Council who had been already nominated.

The PRESIDENT said he did not think it would be policy to mention the names.

Mr. J. F. SIMPSON asked what objection there could possibly be.

The PRESIDENT said he was not obliged to give his reasons. The time of nomination of candidates had not yet expired.

Mr. J. F. SIMPSON took exception to the President's ruling. Would the President inform him when the voting-papers would be sent out?

The PRESIDENT informed Mr. Simpson that they should be sent out according to the bye-laws.

A hearty vote of thanks was passed to the President, and the proceedings terminated.

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

THE seventh annual meeting of this Association was held on March 28th, at the George Hotel, Grantham, Mr. C. Hartley presiding. There were also present Mr. B. Freer (Vice-President, of Uppingham); Messrs. W. H. Brooks (Fulbeck), W. G. B. Dickinson (Boston), R. T. Hardy (Sleaford), J. MacKinder (Peterborough), T. J. Marriott (Bottesford), T. A. Rudkin (Grantham), J. Smith (Huntingdon), F. L. Gooch (Hon. Sec., Stamford), and Capt. B. H. Russell (Hon. Treasurer, Grantham). The minutes of the last meeting were taken as read.

The CHAIRMAN, in alluding to the small attendance to-day, said it was no doubt owing to, or at least very materially affected by, the other meetings of similar Associations clashing with it, viz., the North of England Association, and Carlisle, and Southern Counties. It would have been as well to have taken care to fix their own meeting for some other day.

Capt. RUSSELL remarked that he really thought the date of the holding of the meeting had been fixed as much as anything for a personal favour to himself; the proper time was altered to suit his convenience, and the Hon. Secretary had sent out notices accordingly.

The CHAIRMAN proposed that the Secretary be instructed to, in future, acquaint the secretaries of other Associations of the date of the meetings, leaving them to do likewise, with a view of preventing the meetings clashing.

Capt. RUSSELL seconded, and it was agreed to.

The SECRETARY read letters of apology for non-attendance from Messrs. Thomas Greaves (Manchester), Mr. Wragg (Vice-President, London) F. A. Gresswell (Peterborough), Prof. Walley (Edinburgh), F. Spencer (Wragly), H. Howse (Lincoln), J. Robinson (Market Deeping), and Prof. Williams (Edinburgh).

A letter from Mr. G. A. Banham, of Cambridge, was read, asking for the support of the Association for his election to the Council.

Mr. F. SPENCER, of Wragly, sent in his resignation as a member of the Association, on the ground of the meetings being held at an inconvenient time.

On the proposition of Capt. RUSSELL, seconded by the CHAIRMAN, it was resolved not to accept Mr. Spencer's resignation until the Secretary had written that gentleman.

The accounts were next presented by the Hon. Treasurer, Capt. B. H. Russell, J.P. They showed cash in hand, £12 17s. 8d., and a balance in the hands of the Treasurer of £1 13s. 1d.

It was agreed unanimously that the accounts should be passed, and Capt. Russell was thanked for his services.

On the motion of Mr. MACKINDER, seconded by Mr. MARRIOTT, it was decided unanimously to expel several members who had failed to comply with the rules by the non-payment of entrance-fees and subscriptions to the Association.

Mr. FREER proposed that the next place of meeting should be Boston. This was seconded by the CHAIRMAN, and agreed to.

The election of officers for the ensuing year was then proceeded with.

Mr. J. MACKINDER had very great pleasure in proposing as President one of the most regular attendants at their meetings, although he had to come from a most difficult place of access. He was sure they would all welcome the name of Mr. Freer, of Uppingham. (Applause.)

The CHAIRMAN seconded. Mr. MACKINDER had taken the words out of his mouth he had intended using as to the difficulty Mr. Freer had in getting to the meeting. He had all the more pleasure, therefore, in seconding the motion.

The SECRETARY (Mr. Gooch) warmly supported the nomination of Mr. Freer. He was a good and useful member and regular attendant, and without the least hesitation had supplied the Association with a good paper at short notice. (Hear, hear.)

The proposition was put and carried.

Mr. FREER, in returning thanks, said he was extremely pleased at the very flattering terms with which his nomination had been seconded and supported. He could only promise them all that as President of the Association he would do his very best for its interests, and he hoped they would have good meetings and profitable discussions as a result of some valuable papers which would be read. He was very proud to become President for the ensuing year.

The CHAIRMAN proposed that Capt. Russell should be again appointed Hon. Treasurer. He had certainly manipulated the accounts with the ability of a Rothschild. (Laughter.)

The SECRETARY seconded, remarking that in his opinion Capt. Russell was the right man in the right place.

The motion was carried.

Captain RUSSELL returned thanks, and promised to do the best he could whilst holding the office.

The CHAIRMAN said the next officer they had to elect was one of the hardest working of all in connection with the Association, and that was the Hon. Sec. He begged to propose for re-election Mr. Gooch, who, he was sure they would all heartily agree, had carried out his duties in a most excellent manner. (Hear, hear.)

Mr. FREER seconded, and endorsed the sentiments already expressed by the Chairman.

Captain RUSSELL had great pleasure in supporting the motion. Although he had reason to think that Mr. Gooch intended to resign at the meeting, or at least had intimated that he was desirous of being relieved from the post, he trusted that he might be prevailed upon to continue the office for at least another year.

The resolution was then put to the meeting, and carried unanimously.

Mr. GOOCH said he came there with the intention of not being again elected as Hon. Sec. He had had the privilege of holding the office for two years, and he was strongly of opinion that it would be better if the officers were spread more over the members of the Association. Still, if it was the unanimous wish of the members then present that he should again take office, he could only say that he would accept the post, and would continue to do his best to further the interests of the Association whilst he held it. (Hear, hear.) There was always something cropping up in the way of work that wanted attending to, but he was, as he before remarked, ready to do what he could.

Mr. MACKINDER proposed that Mr. Hartley be appointed a Vice-President of the Association. This was seconded by Mr. RUDKIN, and agreed to.

Mr. GOOCH proposed Mr. Brooks, of Fulbeck, as a Vice-President. The CHAIRMAN seconded.

Mr. Brooks asked to be excused the office, and the motion was not put.

On the proposition of the CHAIRMAN, seconded by Mr. SMITH, Mr. Dickinson was unanimously elected a Vice-President.

Captain RUSSELL proposed, and Mr. DICKINSON seconded Mr. J. Smith as Vice-President, and he was unanimously elected.

An interesting and instructive paper was next read by Mr. W. G. B. Dickinson, F.R.C.V.S., on "The Disease in Lambs and Calves known as Husk or Hoose," as follows:—

MR. PRESIDENT, VICE-PRESIDENTS, AND GENTLEMEN,

The subject of my paper has been known by the name of "Hoose," or "Husk," affecting sheep, lambs, calves, and yearling beasts. It is an irritable condition of the respiratory organs, due to the presence of a parasite known as the *Strongylus filaria*, giving rise to a hoosing, husky cough, in some instances terminating in Broncho-pneumonia and death.

It is also known to ourselves as Phthisis Pulmonalis Seminalis, and generally as *Filaria Bronchii*.

Young animals are more frequently the victims than those of mature age. If the animals are badly fed the parasites soon cause death, whereas those in robust condition very often are enabled to withstand the trouble caused by the parasite without any treatment medicinally.

The symptoms are very noticeable to the careful observer. When Hoose is the condition, or the lungs are affected, the lambs will be seen coughing spasmodically for several seconds, or even minutes; the least effort, even of rising from the recumbent position is sufficient to bring about this distressing paroxysmal cough, let alone the fact of the sheep being excited and hurried by the dog.

The eyes present a sunken, congested appearance; respirations accelerated; there is a mucous discharge from nostrils; the wool becomes harsh and dry, losing its natural oily feeling; there is great thirst and loss of appetite; the temperature is elevated to 106°, 107°, and sometimes 108°; extreme debility, gradual emaciation, and death. If diarrhoea is also present it is reasonable to expect the alimentary canal is also infested with parasites, the *Strongylus contortus*.

The cough is not always the same in character; sometimes moist, and other times dry—generally moist, when the respiratory organs are in trouble from a preponderance of mucus being thrown out and expectorated. The

dry cough is mostly heard when the stomach and intestines harbour these parasites, and is probably due to the salivary glands secreting very little saliva, hence dryness.

Parasitic disease is found to be most abundant in wet seasons, especially in low-lying, damp districts, particularly in the Fens; not, as some have said, in the Marshes, for these districts possess almost an immunity from it, owing, doubtless, to nutritious pastures and great quantities of salt, which abound naturally in the soil and herbage.

I do not pretend to say cough is always indicative of the presence of parasites, because I have noticed on several occasions a flock of lambs coughing, purging, and losing flesh, terminating in death, when these symptoms have been caused, beyond a doubt, by dietetic errors.

Upon opening the stomach we find an absence of parasites, and inflammatory patches in the rumen reticulum, and especially in the abomasum, with a peeling off of the stomach coats and inflammation of the smaller bowels. We find also concretions of maize, cotton cake, and the outer covering of beans in the stomach, showing the highly stimulating and indigestible nature of this artificial food, the using of which is absurd, particularly the use of cotton cake and lamb foods containing peas, beans, and maize, the suitability of which as forms of diet for young ruminants I greatly question.

There are quantities of fine healthy lambs and calves killed annually from these causes alone. I once saw seventy lambs dead in three days from one flock after being fed in this manner for a week. The symptoms presented in a great measure Husk, and I was consulted as to the treatment by the owner on this supposition.

I have, gentlemen, purposely avoided offering any opinion as to the life history of the parasite, or its mode of access to the lungs, as since October last I have furnished Professor Brown with subjects, soil, and worms (earth-worms), from different parts of Lincolnshire, for investigation, and when his valuable researches into these hidden mysteries are complete publicity will be given to them, when we can further debate on what will be an established cause.

I can only say that the natural host of the filaria has been found in the common earth-worm.

It is found by cutting the earth-worm into small segments, and squeezing the contents on the slide, adding a drop of water, mixing well, and spreading out thinly all over the slide, and by examining it under an inch objective, when probably you will perceive five or six of the mobile filaria.

With regard to the treatment, we have two methods to consider—prevention, and elimination of that which causes Husk, or Hoose. Let us first consider prevention, which implies a great deal. As to preventing the parasite gaining access into the lungs, it is an impossibility if the animals are pastured on soil abounding with filaria.

The sprinkling of the land with chloride of sodium and soot twice during the summer and once in the winter will suffice to destroy, not only the parasite, but its natural host, the earth-worm.

All sheep pastures should be well under-drained and kept practically dry. Changing the lambs from one pasture to the other is a great essential to prevention. Then comes a most important consideration in the selection of stock from which to breed, free from any strumous taint. The predisposition to suffering is much lessened in the robust lambs and calves, even if they become the host proper of the filaria. They seem to withstand the attack without being much affected. An addition to the nourishment obtained from the pasture may be made in the provision of trough food, consisting of crushed old oats, linseed, caraway seed, and malt cake, with an unlimited supply of rock salt and water.

The curative and eliminative treatment must be chiefly directed towards the reconstruction of a weakened, wasted animal economy, by increasing the quantity of the red corpuscles, which are the great medium of respiration, carrying oxygen from the lungs to the tissues, thus being the respiratory elements of the body.

It is important for us, when prescribing for lambs, to remember that the red corpuscles consist chiefly of hæmoglobin, and this particular constituent is very greatly diminished in man and animals where there is impeded or impaired respiratory function.

Elimination, in the sense I apply it, is that function which will assist the animal in ridding itself of the irritant, which is best accomplished by promoting stimulative expectoration, by which means the cough is greatly relieved. Large quantities of parasites are expectorated, and to a certain extent destroyed, if we employ expectorants which alter the chemical composition of the sputa. Sulphur, iodine, aromatic oils, and balsams, for instance, are excreted as such, or as their products, along with an increased flow of mucus. Most of these drugs, especially the aromatic substances, have an antiseptic, deodorant, and disinfectant effect on the secretions, also on the surface from which they are given off. We term these disinfectant expectorants. Now, it is well to note that if the sputa be altered chemically filaria will also be subjected to metamorphosis. The treatment of Husk may be summed up in a few words. Reconstruct with hæmaturic tonics, which will improve the quantity and quality of the hæmoglobin. I find either dialysed iron or ammonia citrate of iron answer admirably. In conjunction with these tonics eliminate by the aid of stimulating, disinfecting expectorants. Eucalyptus, squills, aromatic oils, and iodine play their part most satisfactorily.

I have tried fumigating with chlorine gas and sulphurous acid, but never met with any permanent benefit accruing from their use.

While the lambs are suffering I recommend them to be placed in a sheltered crewe-yard as soon as the grass gets moist, and kept up until the sun shines on the following day, having trough food for the night consumption.

The *Strongylus contortus* is soon got rid of by the use of p. korisso, ol. felicis, and terebinthine, given daily for three or four days fasting, in conjunction with linseed oil or sol. of gum tragacanth.

As far as my experience teaches me, the intertracheal injection has not been successful in lambs, and if conducted at all, I think it should be preceded by a course of tonic treatment. The mortality is generally greater after the injection than before it. The *post-mortems* revealed the cause of death to be Lobular Pneumonia, an extensive portion of the lung being involved, death taking place early in the attack, as only the engorgement stage had developed, with no sign of hepatisation. In the smaller bronchii large quantities of broken-down *debris* were discovered undergoing caseation, entirely occluding the bronchial tubes.

Looking at the extremely delicate structure of the lung of a lamb, there is no wonder at their inability to admit of pungent liquids being introduced.

Calves do extremely well after injection, and I consider it quite successful, as, with only two exceptions, I have never seen it fail, but completely cure some very bad cases, where recovery seemed almost impossible. The older the calves, the sooner is the manifestation of improvement. The treatment may be repeated daily for three or four days, then every third or fourth day. I would suggest, if a lot are to be injected, for two or three syringe-points to be employed, and constantly dipped in a solution of perchloride of mercury, 1 in 200, thus preventing the formation of abscesses at the point of puncture, causing difficulty in swallowing, and serious constitutional disturbance from

systic injection. It has been the custom since time immemorial to insert a seton into calves when they begin to cough, and, indeed, many stock-breeders have it done to prevent them coughing. Benefit is certainly derived after they are setoned, which is probably in a measure due to the manner in which they are housed and fed.

In conclusion, gentlemen, if the treatment of lambs is conducted on the principles I have advocated I am confident it will prove successful. It answers equally in young calves, but the older ones require the injection treatment.

In most cases, before giving any opinion as to the probable duration of the period required for treatment, if possible make a *post-mortem*, when the condition of the lung will give an idea of the length of time the parasites have existed.

At the conclusion of the paper the Chairman said it was a very interesting and practical essay. He called upon Mr. Brooks to open the discussion.

Mr. BROOKS said he quite coincided with the views of the writer of the paper.

Captain RUSSELL remarked that he certainly thought their thanks were due to Mr. Dickinson for the very able manner in which he had drawn up the paper. With regard to the host of the filaria, it was thought so far back as 1871 that it was to be attributed to the common house-fly. There was one part of Mr. Dickinson's paper in which reference was made to the peeling of the coats of the stomach of ruminants. He thought it was a common occurrence when making *post-mortem* examinations on that order of animals for the coats of the stomach to peel off. Asking simply for information, he would put it to the meeting as to whether or not it was the opinion of the members present that if they made a *post-mortem* of a ruminant, say six or eight hours after death, the stomach would not peel off. With regard to inter-tracheal injection, he must confess that he had had but a very slight experience. That experience, however, confirmed the view held by Mr. Dickinson, and so well described by him in his able paper. Alluding to some remarks by Mr. Dickinson, at the conclusion of his reading, upon the prices charged for attendance and medicines by some practitioners, Captain Russell said he found that if he sent out the medicines required the farmer generally administered them to the animals. After some further remarks upon the prices charged for various things, Captain Russell reminded the members that there was now a marked improvement in the fees charged and the status of the profession altogether since that Association, and others of a similar character, came into existence. In conclusion, he thanked Mr. Dickinson for his very able paper, and expressed the hope that in the course of twelve months some useful revelations would be published as a result of his discovery of the host of the filaria in the common earth-worm. (Hear, hear.)

Mr. MACKINDER said he had himself read a paper on the same very interesting subject, when at college, twenty years previously. The main question had always been where had the parasite come from? These filaria, if taken and examined carefully, would be found to be both oviparous and viviparous. Many of them were found in the grass on certain soils, but not, as Mr. Dickinson had justly remarked, in marshy districts, because of the salt contained therein. He had not had much practice with regard to the inter-tracheal injections, but quite agreed with Mr. Dickinson on the subject. He always found it to be a much better plan, however, to build up the structure of the animal. There was even then an almost certain after result to be looked for, in the shape of Blackleg. The speaker concluded with quoting the prices he charged for various medicines, etc.

Mr. FREER thought it was a very valuable paper, and was firmly of opinion that there was a very large amount of experience compressed in it. His own

practice had led him to the conclusion that if Hoose, or Husk, were taken in time, and the lambs were put up and given artificial food, they generally got over it. He quoted a case in which this treatment had been successful. Upon the subject of the peeling of the coats of the stomach after death, he found that to be the case, more especially where there had been acute inflammation of the various parts. In certain cases, or he might say in many instances, where the disease occurred, it was absolutely necessary to use the inter-tracheal injection. He gave an instance of having administered the injection to thirty-six animals, and spoke of its beneficial effects, at the same time handing round his instrument to the assembled members for inspection. Speaking of setoning, Mr. Freer bore testimony to its beneficial effects. He did not himself use tape, as was usually done, for the operation, but he got an old sugar-bag, and took the trouble to pull it thoroughly to pieces, and then plaited up the strands two or three thick.

After a few remarks from the CHAIRMAN, in the course of which he stated that he had used the injection in about ninety lambs in an hour and a half or an hour and three-quarters.

Mr. GOOCH, the Hon. Secretary, said it was very seldom that he had had the pleasure of listening to such a perfectly complete and interesting paper as that which had been read by Mr. Dickinson. Having stated what prices he usually charged for certain drinks, etc., mentioned in the course of the discussion, he went on to remark that in the matter of drinks he generally gave them for two mornings in succession, then ceased the third, and administered another again on the fourth morning. He used tape when setoning.

The CHAIRMAN said he himself found horsehair cord very good for the purpose.

Mr. SMITH thanked Mr. Dickinson for his paper, both for the matter contained therein and also for the manner in which he had put it before the meeting. He quite agreed with the writer in his statement that it was far better to keep stock which were suffering from the filaria in dry quarters, and proceeded to name various remedies which he considered best at such periods. He mentioned fees charged in his neighbourhood by himself and others.

Mr. RUDKIN was of the same opinion with Mr. Dickinson as to the cause of the disease forming the subject-matter of his essay. It was particularly so in that neighbourhood, more so where sheep were run thick together. He thought a great deal of it was due to turning out the young animals too soon. If the turning out were deferred until there was new feed for the animals they would very often escape the disease altogether. As regarded the lamb food, he was of opinion that some of it did more harm than good. He could, however, recommend MacKinder's lamb food, and had found in many instances that young animals did well upon it.

The CHAIRMAN then called upon Mr. Dickinson to reply to the discussion.

Mr. DICKINSON was warmly applauded on rising. He disclaimed the idea altogether of his being the discoverer of the host of the filaria. Some fifteen or twenty years ago mention was made by Cobboid of the earth-worm as being the probable host of the parasite, and this had led him to make the search for it, with the result already described. And even now they only knew the intermediate host of the filaria, but before long he hoped something more definite would be arrived at. As regarded eggs, or ova, no mention at all was made. He had not discovered any on the slides of the microscope, but simply found the mobile worm; and it would be seen that this was very active indeed when first squeezed upon the slide. He thought that the way in which the parasites were transferred to the beast was from their lodgment underneath the blades of grass. They were taken into the system by the mouth. As to any other means of access or cause, he did not believe in it.

at all. For setons he used hemp and horsehair, which he thought could not be beaten. He recommended the use of a cork on the point of the instrument. He thanked them cordially for the manner in which they had received his paper.

Capt. RUSSELL said he had a proposition to make, and that was that the best thanks of the meeting be given to Mr. Dickinson for his paper.

Mr. GOOCH seconded. He was sure that it had been a most instructive essay, and he thought they had all learned a great deal from it.

The CHAIRMAN supported, and the motion was warmly accorded.

Capt. RUSSELL said he wished to make a few remarks upon the subject of the elections to the Council of the Royal Veterinary College. There had been for some short time past an understanding amongst the different Associations, of which that was one, for a particular member to be nominated each year. That nomination was, according to the mutual understanding arrived at, to receive the support of each of the several Associations to which he referred. The agreement entered into by them was to support one another, and to support the candidate selected by each Association every year. They (the Lincolnshire Association) had supported most heartily the candidates who had been selected by other Associations, but when it came to their turn last year—when they did him the honour of selecting him as the candidate—the other Associations failed to carry out the agreement entered into. The consequence was that he received 418 votes only. There must be some reason, he thought, why these other Associations had not backed up the nomination, and he should never again offer himself for election. He wished to put a name before them, however, and to ask for their support, leaving the other Associations to do as they pleased in the matter. He should like to ask the meeting how they could reconcile what had been the performances of the other Societies mentioned with their previous promises. There was not a doubt but that if the nomination last year had been backed up as it ought to have been he would have been elected. His politics with respect to the Council were pretty well known. He had nothing more to say on that point, except to request them to most heartily support Mr. F. Blakeway's nomination for membership to the Council of the Royal College of Veterinary Surgeons. After referring to his views with regard to the Council, which, he thought, should be composed wholly of practical men, Capt. Russell concluded by again urging those present to support Mr. Blakeway.

Mr. MACKINDER said the last speaker had really taken the work out of his hands. As they were all aware, the Lincolnshire Association combined with other similar Associations for the purpose of securing a member to represent them on the Council. They (the Lincolnshire Association) had kept faithfully to their pledge, but it was clearly manifest that the others had not. However, he had good reason to know that if Capt. Russell would but allow himself to be again nominated for the post he was quite sure that he would be elected. He had pleasure in nominating Capt. Russell for the Council.

Capt. RUSSELL said that he had no intention of standing. That was the fourth time he had been nominated, and there must be a reason—something in the background—and he was under the painful necessity of asking Mr. MacKinder to withdraw his proposition.

Mr. DICKINSON said he had expressed great surprise at the non-election of their friend Capt. Russell in the previous year. He quite agreed with Mr. MacKinder that he ought to stand again.

The CHAIRMAN seconded Mr. MacKinder's motion, stating that it was apparently the unanimous wish of the Association that Capt. Russell should stand.

The motion having been put and carried—

Capt. RUSSELL, rising, said they really had misunderstood him. He was extremely obliged to Mr. MacKINDER and his seconder for their kindness, but he did not intend again to offer himself as a candidate for the Council.

Mr. MACKINDER, thereupon reluctantly withdrew his motion, and the Chairman said Capt. Russell must take the motion, then, as a vote of confidence in him by the members of the Association.

It was then agreed to support Mr. Blakeway's candidature in the usual manner.

Pathological specimens were exhibited by the members, and Mr. Dickinson had on view a microscope with some interesting objects.

Votes of thanks to the President and officers brought the meeting to a close.

Dinner followed, Mr. Hartley occupying the chair, and a pleasant afternoon was spent.

F. L. GOOCH, *Hon. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary General Meeting of the above Society took place at the First Avenue Hotel, on April 4th, Mr. Alfred Broad, the President, in the chair, and present twenty-five Fellows of the Society and seven visitors.

The PRESIDENT said, before calling upon the secretary to read the minutes, he wished to heartily welcome those members of the Southern Counties Veterinary Medical Association who were present, and he hoped they would have a pleasant evening. Professor PRITCHARD, ex-president of the Southern Counties Association, having responded, and the minutes being confirmed, the secretary read letters of apology for non-attendance from Professor Walley and Mr. Henry Withers.

Mr. F. W. STANLEY, M.R.C.V.S., of Old Kent Road, London, was unanimously elected a Fellow of the Society, and Mr. Alfred Prudames, M.R.C.V.S., of Berkhamstead, and Mr. H. C. Legge, M.R.C.V.S., of Dorking, were nominated for Fellowship.

Mr. WILLIAM HUNTING then read his Paper on "The Teaching and Examining of Candidates for the Diploma," as follows:—

MR. PRESIDENT AND GENTLEMEN,—It is in no spirit of fault-finding that I have brought this question before you. For many years it has been one in which I have taken great interest, and which has never, I think, been satisfactorily discussed.

With the details of teaching in our veterinary schools I have neither wish nor right to meddle, but it is impossible to consider the whole question of examination without a reference to the teaching.

I am asking your attention to what is one of our most practical responsibilities. We, as members of the profession, are vitally interested in the quality of man we admit to our ranks. With us it lies whether he shall be a credit or discredit to us, whether he is the kind of man who will add to our general knowledge, do justice to his client, and honour the diploma by which we recognise him, and by which we recommend him to the public. Our name and title is now by Act of Parliament a right and a privilege—no man may assume it. The State has conferred upon us a privilege, and we must acknowledge our duties; the greatest of which is to keep the standard of intelligence and knowledge possessed by its members at a level proportioned to the duties we have to perform, and the privileges with which we have been invested. We submit all candidates for the diploma to a test. This test is carried out by a board of examiners, who are selected by the Council. The method and quality of examination is decided by the Council, and we, the members of the profession, are responsible for the actions of the Council. If each individual member fails to form any idea of the way in which our Council

should act, or if he form an erroneous idea we shall certainly be punished for it in the course of time by the natural effects of errors committed by our representatives. I think that our existing arrangements for the admission of men to the profession are positively evil. Whether I am right or wrong, I feel quite certain that no question is more worthy of our earnest attention.

Whatever subjects we require our examiners to test a candidate's proficiency in, those the schools must teach. Whatever standard of excellence we require the average candidate to reach, will be the level of the school teaching. So that practically, we control the quantity and quality of the teaching. We do more; by the arrangement of our examinations we interfere with the method of teaching, and thus we incur a serious responsibility. It is quite possible for the Council to so arrange the subjects of examination and their order as to compel a system of teaching injurious to the student, unfair to the schools, and detrimental to the profession.

I have arrived at the conclusion that this condition has been reached, and that it is necessary to revise the whole subject of our professional examinations before it does serious harm. Of course I shall be told that this has quite recently been done, that the revision was carefully carried out, and that the very best available evidence and intelligence was brought to bear upon it. I shall be told that the interests of the students, the schools, and the profession were all represented on the Council that adopted the existing regulations. I shall also be told that frequent changes are productive of disorder and inconvenience, and that we should give a fair trial to the new arrangements.

I quite appreciate the force of these arguments, and I may say that their weight would be even greater in the Council-room than at this meeting, because in that room legislative progress is only possible by compromise between the various interests represented, and it is not improbable that such compromise may have missed the mark—nay, it appears even probable, when we consider that the Council may be roughly divided into two classes, examiners and teachers, who, from previous associations and unconscious bias, would naturally propose no radical change; and practitioners and others who, from their training and position, cannot be expected to have very definite ideas about teaching or examining. At any rate, gentlemen, I shall ask you to put aside the argument that because certain arrangements exist, they are the best. The "survival of the fittest" is a true expression of natural law; "that we cannot stand still," is but another phase of the same thought. Our environments alter, and we must alter with them or we shall become unfit. I do not say the profession is becoming less fit for its work and its position, but I do say it might be more fit, and I believe one obstacle to improvement is our method of examinations.

If we trace the origin of the examinations for the Diploma, we find that they are the result of gradual development, they have not been arbitrarily imposed. They commenced on the simplest basis, and have been gradually modified and added to. The first veterinary school was in existence over half a century before a Charter was given to the profession; and our examination is the lineal descendant of the test applied to the six-months student who left Camden Town in Professor Coleman's time. Slowly and gradually the standard of proficiency has been raised in proportion to the growth of the profession, and the demands made upon it by wider public recognition; in proportion also to the educational advance made by other professions. New subjects have been added to those which were once thought sufficient. Botany, Morbid Anatomy, and Therapeutics are comparatively recent additions. Chemistry, physiology and pathology have been so added to and extended by modern research, that they require almost double the attention from the student than was given to them thirty years ago, and proportionately our examiners have raised their standard of proficiency. All these additions

and extensions necessitated a longer period of study, and a re-arrangement of the teaching curriculum. This the schools have supplied, and I am bound to acknowledge that they have neither been slow to recognise what was of advantage to the student, nor tardy in affording the requisite improved tuition.

And here I would just say a word concerning the relationship of the schools to the body-corporate. They are inter-dependent and absolutely necessary to each other. Before the passing of the Veterinary Surgeons' Act, every attempt to make any alteration affecting the schools was powerfully checked by threats of obtaining independent licensing powers. Progress was made with difficulty, and by compromise which almost rendered the change of no value. It is different now, and the opposition of the schools can only take the form of action on the Council. This quite legitimate action must be expected and must be provided for.

The interests of the schools and the profession are not always identical. We have no special desire for the influx of large numbers of new recruits; they have every interest in obtaining new entries, and also in rapidly passing them through their establishments into the ranks of the profession. We want the highest quality of member we can get; the schools necessarily send us various grades, and cannot be expected to look favourably upon any test which sends back upon their hands many rejected candidates.

There are four schools, and it may be argued that the natural result of competition will be that the one which attains the highest standard of educational results will gain the most pupils; that, therefore, their interests are identical with those of the profession, so far as having examinations which only good men can satisfy. This might be true if all parents and guardians could judge correctly, and if all students desired knowledge as keenly as they do the diploma—conditions we unfortunately have not yet attained.

It is our duty then to arrive at a correct decision on three points—

1st.—What should entitle a man to receive our diploma?

2nd.—How may his knowledge be tested most effectually?

3rd.—Are our methods of testing fair to the student and the schools?

What should entitle a man to receive our diploma? I answer—Exhibition of a certain standard of proficiency in those subjects necessary to make a sound veterinary practitioner. These subjects are:—

1. The principles and practice of veterinary medicine and surgery,
2. Anatomy,
3. Physiology,
4. Chemistry,
5. Materia Medica and Therapeutics,
6. Botany and Hygiene.

The principles and practice of veterinary medicine and surgery.—This branch of study is better indicated by the word pathology used in its older and wider sense—the study of disease. I include in it the modern branches described as pathology and morbid anatomy. The subject is too extensive to be disposed of at one examining table. To divide it into horse pathology and cattle pathology I consider an inconvenient division, as it must lead to the repetition of questions, and too often to some contradiction. Doubtless it must be divided, and as our practitioners seldom combine an equally first-class acquaintance with the diseases of all animals, some division permitting special knowledge of cattle at one table is desirable. It is also well that the division should be definite, so that the two sets of examiners should not take a student on the same subject merely applied to a different animal. I suggest that a convenient division would be:—

1st.—Medicine, surgery, and pathology.

2nd.—The contagious and parasitic diseases, and obstetrics.

The first would have two examiners, one selected for his special knowledge

of the principles and practice of medicine and surgery ; the other for special knowledge of morbid changes and actions.

The second would have two examiners, one a specialist on cattle and obstetrics ; the other a specialist on the transmissible diseases.

This arrangement would do away with a special table on morbid anatomy, and conjoin the examiner on that branch with the one on medicine and surgery.

Obstetrics are chiefly applicable to the cow, and may well be looked after by the cattle pathology examiner. The contagious and parasitic diseases are mostly amongst oxen, sheep, and dogs, so that the whole table would specially fit men with experience of cattle. By basing the examination on certain subjects, instead of certain animals, we should avoid the possible repetitions which are equally applicable to any or all animals—such as wounds, fever, fractures, etc.

Anatomy.—There can be no two opinions about this subject. Surgeons, whether veterinary or human, can never know too much anatomy, and our examiners should require a sound knowledge of this indispensable subject.

Physiology is as necessary as anatomy, and I believe is everywhere well taught. At this table histology should be included.

Chemistry is less important than those I have mentioned. Of course, a man cannot know too much of it, but he may buy his knowledge too dear. Our graduates cannot master many sciences, and we had better have a little well learned than a greater quantity only half digested. A sufficiency of chemistry is what will enable a man to understand his physiology, pathology, and materia-medica. I often wonder how the amount is obtained in the time permitted by our first professional examination.

Materia Medica and Therapeutics are certainly worthy of a separate table of examiners. A casual question on drugs at the pathology table is no test at all. We have not the excuse of the medical profession, that the dispensing is done for them by pharmacutists. We ought to be able to recognise all our drugs, and be able to compound them rationally. As to Therapeutics, we are woefully behind. Unless we test men's acquaintance with what little may be accepted as exact therapeutical knowledge, we shall never emerge from the dismal gloom of simple faith and stupid ignorance which now guides the use and abuse of remedial agents.

Botany and Hygiene.—The latter is an addition which I consider should be made to our test subjects. It is no addition to the teaching, being more or less taught at each school as incidental to some other matter. Hygiene, including, as it does, the stabling, feeding, and shoeing of animals, is quite indispensable, and must be made a systematic part of our studies. Proof of some proficiency in it would prevent the recurrence of the charge that men have obtained our diploma who were more conversant with the tissue changes of disease than with the habits and wants of healthy stock.

Botany is a vast subject, and our graduates only waste time if they attempt to master it as they must physiology. We cannot afford the time ; nor is it necessary that the practitioner should know more than is directly applicable to medicinal and poisonous plants, and to the various roots, grasses, and grains used as food. We do not require the minute knowledge of varieties essential to a gardener, nor do we expect the grasp of structural botany which would be expedient if our men were training for biological specialists. I quite allow that a first-class botanical education is invaluable to a man who intends to devote his life to scientific research, and it is of great assistance to the physiologist and pathologist ; but the capacity of the average man is limited. You may very easily educate a man beyond his intelligence, but the result is mental confusion. We want clear-headed men who understand what they know, and would prefer them to be narrow rather than shallow.

These, then, gentlemen, are the subjects we require a graduate to show proficiency in, before admitting him to the profession. Very little have I added to existing requirements, but very considerably would I alter the arrangement by which we test them. Now how would my suggestions affect the schools? I cannot answer this question, and must ask the teachers to assist me. All I know of the schools' curriculum is derived from the few pages devoted to the schools in our register. Perhaps I ought to have applied to the principals of the schools for fuller information, but no harm can be done by my negligence.

I have here a table showing what I believe to be of course followed at each school, and I have attempted in the last column to combine the best of the whole number. I have tried to arrange a model course, and I find it differs very little from what practically is done at each school. The difference is rather one of arrangement than extent or number of subjects:—

COMPARATIVE CURRICULUM AT THE FOUR VETERINARY SCHOOLS.
With a suggested Re-arrangement.

School I.	School II.	School III.	School IV.	Suggested Re-arrangement.	No. of Classes
Hippo-Pathology and Surgery.	Veterinary Medicine and Surgery.	Veterinary Medicine and Surgery.	Veterinary Medicine & Surgery.	Veterinary Medicine and Surgery, Morbid Anatomy.	1.
Cattle Pathology.	Cattle Pathology, Morbid Anatomy.	Comparative Pathology and Materia Medica.	Cattle Pathology, Helminthology and Obstetrics.	Obstetrics, Contagious and Parasitic Diseases.	2.
Anatomy.	Anatomy, Materia Medica and Therapeutics.	Anatomy and Pathological Histology.	Anatomy, Morbid Anatomy.	Anatomy.	3.
Physiology.	Physiology & Histology.	Physiology and Histology.	Physiology, Histology.	Physiology and Histology.	4.
Chemistry.	Chemistry.	Chemistry.	Chemistry and Botany.	Chemistry.	5.
Therapeutics.			Materia Medica and Therapeutics.	Materia Medica and Therapeutics.	6.
Biology.	Botany and Helminthology.	Botany.		Botany and Hygiene.	7.
Clinic.	Clinic.	Clinic.	Clinic.	Clinic.	8.
Demonstrations in Histology, in Pharmacy, in Morbid Anatomy.	Demonstration.	Demonstration.	Demonstration.	Demonstrations in Histology, in Pharmacy, in Morbid Anatomy.	Conducted by whole staff and special assistants.

How may a candidate's knowledge be best tested? To merely reply, "Submit him to an examination by experts," is to only half answer the question. We do that now. We might do better. The whole subject of examination is neglected. We leave the matter to our Council, not only with a blind faith, but I fear with a feeling of indifference, or at best with a notion

that it is too complex and technical for us to safely interfere with. We shirk our responsibilities, and call our behaviour modesty. I propose very briefly to examine the whole question, and shall sketch an outline of what I consider should be the answer.

Candidates for the diploma are now submitted to an oral and what is called a practical examination.

The oral is conducted for twenty minutes by two examiners at each table, and I think the arrangement is quite satisfactory.

The practical as now conducted, I have no objection to. The term "practical" is grateful to most men, but it often implies more than it really means. When it was first instituted, our practitioners fancied it was a great advance; comparatively, it was so, but, absolutely, it was only bringing the examination on the practice of medicine and surgery up to the same completeness as other tables. At every table specimens are, or should be, available to ask questions on. The practical is only an oral with the specimens before us. An oral examination on any subject without specimens, may be passed by a man with a good memory and no knowledge outside of books. With them he must identify objects, and show his ability to apply what he has learned. The horses, cattle, dogs and other animals, with the various instruments and apparatus forthcoming at the practical examination, are only specimens suitable for the subject being tested. At no table is an oral examination complete without specimens for identification.

A written examination is the surest and safest way of thoroughly testing a man's knowledge. It gives him time to collect his thoughts, and opportunity for accurate expression of what he knows. No parrot-taught man makes a mark at a written; whilst the slow or nervous man is not flurried. A written examination might be limited to half an hour for each subject, and if the students commenced their papers two hours before the examiners commenced the oral, no difficulty would be found in getting through the work. I am convinced that the average student who works fairly well never has justice done him until a written examination is adopted, and I believe that such a test would do more to ensure really sound education, in contra-distinction to "cramming," than anything we could adopt. If I am right, would not the end justify the means? I ask this, because there are difficulties of detail which may be suggested with great plausibility. A written examination would require more time, it would cause more trouble, and possibly more expense. If, however, it be expedient, we must not let these obstacles prevent us from doing right.

So far, I have arrived at the decision that our test should consist of an oral, a written, and a practical examination by experts, and that some seven different subjects require to be tested. Now clearly all this could not be conveniently conducted at one long sitting, and a division of the test into two or more stages seems advisable. Our Council has seen fit to divide it into three stages, which are respectively carried out at the end of the first, second, and third years of the student's life at college. Whether they adopted this course to facilitate the candidates' admission into the profession a step at a time; or because they thought an examination at the end of each year's tuition might give an impulse to the student's desire for work, I know not. One result of the arrangement is very evident—it compels the school to teach in the exact order of the examinations, and practically limits them during each session to the subjects required at the next test. A division of the examination into two stages seems to me convenient, but I fail to understand why it should be further subdivided, and for reasons I shall state presently, I am convinced the three stages now adopted are altogether wrong.

It is not so long ago that only two sessions at college were requisite to enable a man to present himself before the examiners. When it was deter-

mined to widen and strengthen the examinations, a necessary corollary was an extended school curriculum. The change was made, and ever since confusion and dissatisfaction have become apparent. All the grumbling we have heard is not without reason. "Where there is smoke there is fire," and no doubt students, teachers, examiners, and the profession have not grumbled without cause. My idea is that we have in our recent changes only touched the fringe of the question, and that we have missed the mark because we have not so much faced the subject with a desire for radical improvement, as with a willingness to offer fair play and a desire for quiet. Each section has thought some other was to blame; whereas the whole arrangement is wrong, and the inter-action of ill-adapted parts upon each other has caused friction, and interfered with the smooth running of the whole machine. For the wrong arrangement the Council is to blame; but the schools cannot assume the position of martyrs. They were well represented on the Council, but they failed to see the effects of the new organisation, and allowed the rules and regulations to be formed to their own detriment. The only section I feel any sympathy for is the student, who between teaching and examining has certainly been the victim.

The periods at which examinations are held is another point which should be considered in its bearing upon the schools and pupils. If the body-corporate allow examinations to take place in the middle of a session, then the students will enter college at that date. The classes at college extend from the beginning to the end of a term. Men who enter in the middle hear only the latter half of the course, and thus missing all the earlier teaching, are never able to follow the lectures or overtake the lecturer. It may be possible for a really clever student to overcome this difficulty, but the average man is simply in a fog the whole of his first term, and fails to obtain a connected idea of his subject—even if he does not become disgusted, and permanently join the ranks of the idlers.

A few words concerning our examiners are requisite to complete any comprehensive view of examinations. The selection of an examiner is one of the most difficult tasks our Council has imposed upon it. If it were sufficient merely to find a man who thoroughly understood his subject, and rightly appreciated the amount and direction of knowledge a candidate should possess, with a view to practising veterinary medicine and surgery, the task would not be easy. But more than this is wanted to make a good examiner. There are many men who know, but not many who have the power to determine what others know. The gift of imparting knowledge (teaching) closely resembles the gift of extracting or testing knowledge (examining), and both are not necessarily associated with the possession of knowledge.

The appointment of examiner is now made for five years. I think three years should be the outside time for which we should entrust men with such responsible duties. If they have shown themselves suitable for the office their re-election is simple, but as we have frequently to appoint untried men, we should, by a short term of service, guard against anyone holding the position for the longer period after evidence of unsuitability.

Two examiners at each table is decidedly right. It is not only a guarantee of fair play, but it provides variety of minds—hence variety of questions and greater opportunity for thoroughly testing the knowledge of the candidate. To say that an examiner is only human, is to confess that he is not altogether free from fads and prejudices. Everyone knows how we all possess some disproportionate estimate of the value of certain questions. Students soon detect these weaknesses, and in a year or two intending graduates have collected a long list of what questions and what answers certain examiners hold sacred. These are specially learned by every candidate, and, it is said, have a very favourable effect upon the examiner when they are told off with

an innocent fluency. The presence of two minds at each table discounts the effect of these little peculiarities. The reduction of the five years' appointment to three would also help to qualify the stereotyped questions.

Perhaps the examiners will pardon me for adding just two remarks as to the way they perform their duties. We have no fixed standard as to the extent of knowledge a candidate should possess. There is a wide margin for each examiner to fix as the minimum and maximum value of a question and answer. The sound guide seems to me to be, to keep within limits defined to the utility of the knowledge implied by a correct answer. The candidate is to show fitness for the position of veterinary practitioner, and therefore on some subjects may well be excused the thoroughness which would be looked for in a specialist. I hold that it is more the duty of an examiner to find out what a man knows than what he does not know. He should therefore multiply questions, and not cross-examine on one subject.

Are our methods of examination fair to the schools and student?

From what I have said in discussing the methods most likely to admit only really good men to the profession, you will have anticipated that I think our methods are not fair.

The student would probably not acknowledge the addition of a written examination as a benefit. Men often fail to recognise their own good, and we, who have experience not only of studentship, but of the after life of practitioner, must form our own opinion, and conscientiously act for the good of the candidate. From our point of view a written examination would undoubtedly afford additional security against the admission of men whose knowledge was only superficial, and too probably transient; our further experience enables us to say that even for the welfare of the student a written examination is advantageous—if not presently, certainly in a not remote future. A written examination would also do justice to the honest teacher by indicating very distinctly which men were taught and which were only crammed.

The greatest mischief done by the existing arrangements is traceable to the First or A examination. It tests a man's knowledge of Botany, Chemistry, and Anatomy at the end of his first session. Naturally, students confine their attention merely to these subjects, and teachers limit their instructions to the requirements of the examiners. Let us consider the effects in detail.

Botany.—All knowledge of this subject must be acquired from books and dried specimens. Until summer has come and gone it is impossible for a man to obtain a rational comprehension of the plants and trees, the flowers and the shrubs, which, during the winter, are wholly or partially invisible. Neither student nor teacher can be fairly treated by an examination which limits study to a period absolutely incapable of affording a natural view of the objects studied.

Chemistry.—In the dark days of professional ignorance—in the days when I was a student—we had two sessions in which to study this wide and difficult science. Now, in the days of our illumination we ask men to master it in seven months. Is this due to the greater intelligence of the candidate, or to the greater density of the Council? Surely this arrangement must be injurious to both schools and students. It cannot be seriously argued that even a useful smattering of chemistry can be obtained in seven months, even if every day of the week produced a lecture or a demonstration. I think the study of chemistry should be extended over two sessions, so that sufficient time might be given men not only to swallow, but to digest and assimilate the mass of facts and principles laid before them. During the first session the theory, during the second the practical work in the laboratory would occupy their attention.

Anatomy.—The rules and regulations printed in our official Register do not

use the word anatomy to express the third subject required at our A examination. They say "Elementary Anatomy." Would any educated man imagine that under such a term reference is only made to the bones and ligaments? Does not the term suggest the mixed ideas entertained by our Council? Who, with any real estimation of the value of language or science could have misrepresented the subject by the choice of such a title? The correct expression would be Partial or Limited Anatomy. What other science was ever so arbitrarily divided? Fancy Elementary Physiology being defined as limited to the circulation, or Chemistry being examined on as far as hydrogen and oxygen. If this Anatomical Examination had no greater evil than exhibition of ignorance on the part of its inventors, I should treat it as a trivial mistake; but it has a far wider evil—it limits the teaching for a whole session to this one division. The schools must pass their men; to do so they teach up to the examinations, and so first-year students are anatomically starved on bones and ligaments. I do not hesitate to say that neither the bones nor the articulations can be properly understood without dissection of the muscles, *pari passu* with the study of the other structures. How can a man remember the relative position of bones until he has seen them *in situ*? or appreciate the rationale of prominences and grooves till he has seen the structures attached to or passing over them? How can he learn the mechanism of the articulations—say the shoulder, for instance—when, not ligaments, but the tendons of muscles, play the chief part in fixing and controlling the joint? We should do all we can to brighten and assist the studies of youth. Goodness knows! bones are dry enough reading, and a sufficient tax on the memory even when made intelligible by the relationship of muscles. To debar a man from dissecting until he has thoroughly learned his bones and ligaments is nearly as bad as insisting that a man shall not be allowed to go into the water until he can swim. I do not say dissection of muscles should be commenced by a student absolutely ignorant of the bones; I would let him learn their position, names, and general features, as now. But allowing three months for this, he should then continue their study, assisted by dissection of ligaments and muscles. Two useful purposes would thus be served—he would obtain a more thorough knowledge of the whole locomotor apparatus, and the diversity of occupation would make his work less irksome. So long as our A Examination remains as it is, so long will schools cut their teaching to fit it, and just as long will anatomy remain a subject ill-taught and ill-learned.

I have attempted to show that every subject of the A Examination presents a difficulty in being forced into one session, and could be better taught if the schools were given more time. I see only one logical conclusion, viz., to do away with this test altogether, and only to examine students after they have had two sessions at college. By so doing, we should leave the schools quite untrammelled in their arrangements and methods of teaching; we should allow the student time to thoroughly master his subjects, and we should expect an improvement in the quality of candidates for the diploma.

Our Second or B Examination also affects the teaching by its division and arrangement of subjects. It tests the knowledge of anatomy and physiology. Until the second session at college is entered upon, no physiology is taught, and, consequently, in that seven months' course a man has to be crammed with one of the most important and most extensive of the sciences. No branch studied by veterinary students is more important than physiology. Without a fair knowledge of it there is no hope for any man; without it none can progress or even maintain his place in the general advance of our profession. By forcing physiology into a single session, we equal the teaching and supply an obstacle to learning. We render "cramming" a necessity;

whereas our true object should be to induce the schools to supply instruction to their pupils as a good horseman does provender to his horse—regularly, proportionately, not too much and not too little—so that it may be properly assimilated without fear of plethora or anæmia, let alone the risk of choking or impaction.

Instead of three examinations, I should only have two, and the first^e at the end of the second session. To the subjects now included in the A and B Examinations I should add Hygiene. This alteration would add nothing to the teaching, would require no additional examiners, and would really simplify the work of the Council, whilst giving the schools a freer hand.

EXAMINATIONS.

EXISTING ARRANGEMENT.	PROPOSED ALTERATION.
20 Examiners.	18 Examiners. Perhaps additional for Written.
<i>1st Examination (end of 1st Term.)</i>	<i>1st Examination (end of 2nd Term).</i>
Elementary Anatomy .. 2	Anatomy 2
Botany 2	Chemistry 2
Chemistry 2	Physiology 2
<i>2nd Examination (end of 2nd Term).</i>	Botany and Hygiene .. 2
Anatomy 2	<i>2nd Examination (end of 3rd Term).</i>
Chemistry 2	Medicine, Surgery, and
<i>3rd Examination (end of 3rd Term).</i>	Pathology 2
Morbid Anatomy 2	Contagious and Parasitic
Diseases of the Horse .. 2	Diseases and Obstetrics .. 2
Diseases of other Animals .. 2	Materia Medica and Thera-
	peutics 2
PRACTICAL.	PRACTICAL.
In regard to Horses.. .. 2	In regard to Horses 2
In regard to other Animals.. 2	In regard to other Animals.. 2

Our third, or final examination presents little to take exception to, but I hold most strongly that Materia Medica and Therapeutics should be properly tested, and that they cannot be so unless given a separate table of examiners. The effect upon the teaching, of not giving a subject proficiency on the examination list is well shown by this class. Materia Medica and Therapeutics are at nearly every school relegated to a demonstrator, or tacked on to some larger class. Now surely the agents with which we attack disease are well worth some special teaching. Until they receive it we shall remain at the scientific level of calling some drugs alternatives, and some antacids.

The practical test which now forms part of our final examination is necessary and right, but I do not see why it should be conducted by separate men. I think it would be as well done by the examiners—one in the room, and the other in the yard or stable—his chances of failure are increased. Both examinations are on the principles and practice of medicine and surgery; one is the complement of the other, and it seems a very arbitrary division which requires two sets of examiners to complete it.

One more question I must notice, viz., our Matriculation Examinations. The questions set to students on entering college, to test their general education, seem to be just about such as would indicate whether a man possessed sufficient knowledge and intelligence to understand and learn the science necessary to make a veterinary surgeon. From what I have seen of successful candidates, I am certain a very low standard of proficiency is accepted

by the examiners. I should fancy that about 25 per cent. of marks must pass a man. If I am right, this is unfair to the profession at which they aim. The standard of proficiency in general scholastic knowledge should be raised. The answers to such papers as one now given should attain a standard of at least 50 per cent. of excellence.

In conclusion, gentlemen, let me say this is no academical essay, no abstract paper undertaken from feelings of curiosity or instigated by critical perversity. I have simply done my best to lay before you conclusions I have arrived at after some consideration. I have stated the facts and arguments which led me to them. I have suggested the alterations I deem requisite, and it is for you to determine whether or not any further action is expedient. Our examinations guard the portals of the profession, and candidates are remitted or rejected as they approximate to the standard we set up. Our examinations control the curriculum of the school, and to some degree the order and extent of tuition. They play a great part, then, in forming the minds and qualifying the knowledge of our successors. We must feel and acknowledge our individual responsibilities, and if evils exist, we must not allow indifference or fear or favour to stand in the way of right being done.

(To be continued.)

THE WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE sixth general annual meeting of the above Association was held at the President's residence, Southernhay, Exeter, on March 28th, J. P. Heath, Esq., the President, in the chair.

There were also present Messrs. C. Parsons, Launceston; S. Burton, Torquay; W. H. Bloye, Plymouth; C. H. Golledge, Sherborough; H. P. F. Chase, Tiverton; A. H. Oliver, Devonport; A. J. Down, Sampford Peverell; T. E. Baker, Crewkerne; R. E. L. Penhale, Hatherleigh; J. H. Penhale, Bideford; W. Penhale, Holesworthy; J. J. Clarke, Exeter; and the Secretary.

The minutes of the last meeting were read and confirmed.

Letters and telegrams regretting inability to attend were read from Professor Penberthy, Messrs. Collins, Raddall, T. Olver, Smythe, and others. A letter was also received from Mr. Elder, resigning the Treasurership, a post he had held for some years.

The SECRETARY, in his annual report, stated the Association was making good and steady progress. During the past years the papers and discussions had been interesting and instructive, an excellent feeling prevailed, members were increasing, and the Society was in a good financial position.

Messrs. Pethick, of Plymouth, and Marshall, of Paignton, were elected new members of the Association, on the proposition of Mr. BURTON, seconded by Mr. PARSONS.

Mr. H. Thomas was unanimously elected President for the ensuing year; Messrs. Collins, Heath, Parsons, Burton, and Oliver Vice-Presidents; and W. Penhale Secretary.

A vote of thanks was accorded Mr. Elder for his services to the Association in the past, and Mr. Bloye was elected Treasurer in his stead.

It was resolved that some instruments should be purchased for the use of members of the Association, and that Messrs. Heath, Parsons, and the Secretary form a committee to select and purchase the same.

Mr. F. T. Harvey communicated the singular case of a pony which had died from Strangulated Hernia, through the foramen of Winslow.

A vote of thanks was awarded Mr. Harvey for giving the particulars of so interesting a case.

Mr. BLOYE read the following paper on

HEREDITY.

MR. PRESIDENT and GENTLEMEN,—In spite of Mr. Secretary's assurance to the contrary, I am afraid that my choice of "Heredity" as the subject for discussion here to-day is somewhat unfortunate. Of late it has received so much attention at the hands of kindred societies that one incurs the risk of being considered a plagiarist, and with no personal opinions to offer. Nevertheless, the very prominence which it has recently taken, its great importance, and, above all, the amount of debatable pabulum which it offers, perhaps warrant the introduction, and, it may be, render it worthily and necessarily a subject for consideration by the members of this Society.

Before commencing I would disclaim the idea of putting forward anything new or original, and further would beg your indulgence for the shortcomings of a paper too hastily prepared.

In treating the subject and in seeking analogies I have repeatedly gone to the human subject. With such increased opportunity for collecting statistics as man offers, and the positive evidence which such at times affords, you perhaps will admit that this is allowable.

"Like begets like." I do hope that the phrase has not already been repeated *ad nauseam*, for it is the biological law upon which heredity is built. At the outset I admit that I am a believer in this law to the bitter end. Its force is apparent in all forms of life, constantly and everywhere. Both externally and internally do we find this, for not only features and conformation are reproduced, but bones, internal organs, and circulatory organs (some families have large blood-vessels and others small) are equally under its mighty domain.

Practically, of course, this law is not exact, for, as Darwin puts it, "the number and diversity of inheritable deviations of structure, both those of slight and those of considerable physiological importance, are endless." Yet the law itself stands unchangeable.

"Perhaps the correct way of viewing the whole subject would be to look at the inheritance of every character whatever as the rule, and non-inheritance as the anomaly." Of course, heredity has its opponents, but to ourselves naturally at once the art of breeding suggests itself as an argument of crushing weight in its favour. Among men heredity is specially to be noticed in nervous systems. Galton mentions that intellect and great ability are largely hereditary qualities. His statistics show that great oarsmen and wrestlers usually belong to a very limited number of families, among whom strength and skill were hereditary. Musical attributes are common to families; even trifling peculiarities are sometimes inherited—that of handwriting has frequently been observed.

The laws of heredity are generally summarised as four, viz., direct heredity, reversional heredity, indirect or collateral heredity, and the heredity of influence. An American writer adds three further distinctions: co-equal, pre-natural, and initial heredity. However, the first four will probably be sufficient for our purpose. First we have direct heredity. This consists in the transmission of the qualities supplied by *both* parents. This is obviously shown by the fusion of the characters of the parents, as exhibited by hybrids being distinct species or strongly marked varieties among the lower animals, or in the offspring of parents belonging to two strongly contrasted races of men, such as European on the one hand and the negro on the other. From a purely theoretical point of view, this law of *direct* heredity would be the common one, and as described by Lucas "it would consist in the absolute equilibrium in the moral and physical nature of the infant, of the integral resemblances of the two parents, or would equal the exact mean of the parents." As a matter of fact this rarely happens, the rule being that the

influence of one or the other parent prevails in the offspring, and in this regard the tendency to cross heredity, *i.e.*, from father to daughter, or mother to son, appears to be the most frequent. Dr. Carpenter says:—"It has long been a prevalent idea that certain parts of the organism of the offspring are derived from the male, and certain other parts from the female parent; and although no universal rule can be laid down upon this point, yet the independent observations which have been made by numerous practical breeders of domestic animals (both mammals and birds), seems to establish that a tendency has a real existence, the characters of the animal portion of the fabric being especially (but not exclusively) derived from the male parent, and those of the organic apparatus being in like manner derived from the female parent. The former will be chiefly manifested in the external appearance, in the configuration of the head and limbs, in the organs of the senses (including the skin), and in the locomotive apparatus; whilst the latter show themselves in the size of the body (which is primarily determined by the development of the viscera contained in the trunk), and in the mode in which the vital functions are performed. But, however *general* this rule may prove to be as regards the lower animals, it is by no means *universal*; for instances are far from infrequent in which the multiple progeny of one conception, divide between them the characters of the parents in very different modes. Some litters of cross-bred puppies offer an apt illustration of this. It is rare to meet with instances in which *some* distinctive traits of both parents may not be traced in the offspring, these traits showing themselves in peculiarities of manner and gesture, in tendencies of thought or feeling, and in proneness to constitutional disorders. Let me offer as confirmatory evidence on this point, the case of Lisles Geoffroy, an engineer in Mauritius, son of a white man and a stupid negress. Physically he was a negro, with the features and woolly hair of his mother's race, but in moral constitution he was so thoroughly white, as regarded intellectual development, that he was able to overcome the prejudice against him as a negro, and attained to the highest office in the island. Another fact which should here be mentioned is that any peculiarity possessed in common by both parents is almost with certainty transmitted to the offspring. Equally certain is this rule in the case of a diathesis possessed by both parents, and," says Carpenter, "the manifestation of it is likely to be yet more marked if the parents inherit the same family idiosyncrasies."

Next we come to reversional heredity, atavism, wherein the offspring inherits the peculiarities of its grandparent or even more remote ancestor. Side by side with this we may take collateral or indirect heredity, which occurs between persons and their ancestors in an indirect line, as between uncle and nephew, aunt and niece. Reversion is so common among animals that the term "throwing back" is of daily occurrence. In this connection, too, prepotency is often to be observed, one individual being specially powerful in transmitting his character through several generations. The laws which govern these variations are for the most part unknown. Darwin says, "No one can say why the same peculiarity in different individuals of the same species, or in different species, is sometimes inherited and sometimes not so—why the child of ten reverts in certain characters to its grandfather or grandmother, or more remote ancestor—why a peculiarity is often transmitted from one sex to both sexes, or to one sex alone, more commonly, but not exclusively, to the like sex. It is a fact of some importance to us that peculiarities appearing in the male of our domestic breeds are often transmitted exclusively, or in a much greater degree to the males alone. A much more important rule which I think may be trusted is that, at whatever period of life a peculiarity first appears, it tends to reappear in the offspring at a corresponding age, though sometimes earlier.

Hereditary diseases, and some other facts, make me believe that the rule has a wider extension, and that when there is no apparent reason why a peculiarity should appear at any particular age, yet that it does tend to appear in the offspring at the same period at which it first appeared in the parent."

Then, lastly, we have the heredity of influence, a form which offers many familiar examples and always affords an interesting study. The phenomena in connection with it show that where a mother has previously borne offspring the influence of its father may be impressed on her progeny, afterwards begotten by different parent. The well-known instance of a mare which, once having been impregnated by a quagga, eventually transmitted quagga marks to a succession of horse-begotten colts, will readily occur to you. In the human family this feature is frequently seen, as when a widow, marrying a second time, bearing children with strong resemblance to her first husband. A striking case is recorded of a negress whose first offspring was the child of a white man, and who upon subsequently marrying a negro bore him half-caste children. Perhaps of all men dog-breeders are as fully alive to the heredity of influence as any. The jealousy with which they guard the females prior to their first impregnation is a noteworthy tribute to the theory which it implies. It is the habit to attribute these cases to the mental impression produced by the first male parent upon the female, but a theory is also advanced which suggests that the blood of the female has imbibed from that of the foetus through the placental circulation some of the attributes which the latter has derived from its male parent, and that the female may communicate these, with those proper to herself, to the subsequent offspring of a different male parentage.

That mental impressions at the time of sexual congress do make themselves apparent upon the offspring, is borne out by a phenomenon which many breeders are acquainted with, viz, "that a strong mental impression made upon the female by a particular male will give the offspring a resemblance to him, even though she has had no sexual intercourse with him." This condition Carpenter accounts for in what he calls "the dynamical relation of mental states to the organic processes."

We next have to consider some of the modifications of the foregoing laws as brought about by various influences, conditions, and surroundings, modifications for which domestication is perhaps solely responsible, for were there no domestication there might possibly have been no exception to heredity.

Non-inheritance might be explained by the fact that strong hereditary tendencies, although existing, are overborne by unfavourable conditions of life; for instance, cart-horses will not transmit their fine physique and great strength if living in cold, damp, or mountainous regions. European dogs in India often fail to transmit their true character, and our sheep in tropical climates lose their wool in a few generations. To summarize under this heading, let me again quote Darwin, who says, "Under domestication we see much variability caused, or at least excited, by changed conditions of life, but often in so obscure a manner that we are tempted to consider the variations as spontaneous. Variability is governed by many complex laws, by correlated growth, compensation, the increased use and disuse of parts, and the definite action of the surrounding conditions. There is much difficulty in ascertaining how largely our domestic productions have been modified, but we may safely infer that the amount has been large, and that modifications can be inherited for long periods. As long as the conditions of life remain the same we have reason to believe that a modification which has already been inherited for many generations may continue to be inherited for an almost infinite number of generations. On the other hand, we have

evidence that variability, when it has once come into play, does not cease under domestication for a very long period, nor do we know that it ever ceases, for new varieties are still occasionally produced by our oldest domesticated productions." Before concluding this portion of my subject, I cannot help referring to one other point. The fact that heredity is specially observable in nervous systems has already been alluded to. Some of the deepest thinkers in following up this subject in its connection with the evolution of the mind, gauge man's moral responsibility entirely by the hereditary influences transmitted to him, and then naturally apply the doctrine in the consideration of the very complex question of "freedom of will." In an extremely clever paper on this subject Dr. Buchan, to whom I am indebted for some valuable notes, writes: "The wicked are not wicked by deliberate choice of the advantages and pleasure of wickedness, but they sin in consequence of a warped inclination of their nature, which makes the evil seem good to them and the good seem evil. Criminals are quite a manufactured article."

There are no accidents in the laws of the universe; there is nothing accidental or supernatural in the impulse to do wrong. Both come by inheritance or education, or probably by a combination of the two. Science cannot believe that the impulses to do right are purely due to the grace of heaven, and the impulse to do wrong to the malice of the evil one. One might say of the true thief as of the poet, "he is born, not made." Everything, however, goes to prove that the large mass of crime is hereditary, and that a man inherits evil passions and propensities, as well as special features. Hence the hopelessness acknowledged by all prison philanthropists of reforming habitual criminals. Now who are the criminal classes? They are a distinct race of beings, inhabiting a distinct quarter of most of our large towns, living in intemperance and vice, closely intermarrying, and propagating a criminal and degenerate stock. Habitual criminals are true moral imbeciles. Many of these criminals are found to be descended from an epileptic or insane ancestry, and crime is often an outlet of their insane tendencies. They would go mad if they were not criminals. Science does not regard man as an abstract being, endowed with a fixed moral potentiality to do right and eschew wrong; and we cannot consider crime in all cases as a simple affair of yielding to an evil impulse or vicious passion, which ought to have been easily controlled. We must recognise a border line between insanity and crime; near one boundary we meet something of madness, but more of sin; near the other boundary we meet with something of sin, but more of madness.

In regard to freedom of will in connection with heredity—If the majority of men were asked, "Is man a free-will agent?" their answer would be emphatically "Yes." But when we come to consider the matter, especially in connection with heredity, there is a great doubt as to whether man is a free-will agent. Heredity is of a fatalistic character. Heredity and freedom of will are in direct opposition to one another. By free will we are ourselves—by heredity of others. Those in favour of freedom of will say, "I have an innate sense of my freedom of will," but they ignore the fact that every mental state is determined by organic conditions, and that this very innate sense of their freedom comes directly under the head of fatalism. It is a very interesting fact in this connection, that statistics show—that all acts commonly supposed to be the result of free will, such as murders, thefts, marriages and divorces, are almost exactly the same year after year. In France, during twenty years, the number of criminals varied only from 8,000 to 6,000. This reference probably amounts almost to a digression, but I have made it in hope of bearing out and clenching the argument, that hereditary influence has scarcely any limit. Personally, I admit that often in thinking

over this subject, the idea will suggest itself—Are not we ourselves, and the animals with which we have so much to deal, simply passive agents in the carrying out of that great law of evolution, in which heredity plays so prominent and subtle a part?

Now, gentlemen, having devoted perhaps too much attention to this portion of the subject, there remains to be treated of the still more important application of it to diseased conditions. If the deductions to be drawn from the foregoing be correct, then how forcible must be the law of heredity in its application to the transmission of disease. In this connection, and in view of recent events, I take it for granted that the interest of the meeting will centre itself chiefly upon the question of hereditary unsoundness in horses, particularly in relation to those affections upon which opinions are varied; and hence it is to this part of the subject that I would direct your attention. Permit me to read you the Council's ultimatum, issued as the result of its appeal to the profession. "Having considered the evidence which has been laid before them, the Council of the College are of opinion that the following diseases shall be deemed to be a legitimate reason for disqualification: Roaring, Whistling, Sidebone, Ringbone, Navicular disease, Curb, Bone Spavin, Bog Spavin, Grease, Shivering, Cataract."

The Council also consider that under certain circumstances the under-mentioned diseases shall be deemed to justify the rejection of an animal for breeding purposes—Splint, Stringhalt, Contracted Feet, Bursal Enlargements (such as Thorough-Pin and Windgalls"). I do not feel myself competent to criticise the Council, but one can scarcely help offering the suggestion that the latter portion of the recommendation betrays a want of decision, which is somewhat likely to defeat the end in view.

But to proceed. For convenience I have roughly grouped the conditions referred to into—Respiratory, Nervous, Bone, Bursal, and Blood affections, and in addition a few others which are not easily included in either of these categories.

We will commence with the respiratory division. Roaring and its variations, whether from atrophy of nerve and muscle or from chronic thickening of the mucous membrane, have perhaps received as general a condemnation as any hereditary taint which may be thought of. On the other hand, "Broken-wind" at once sets up a *casus belli*.

My late preceptor, Prof. Robertson, held strongly that Broken-wind was hereditary. Mr. Hunting in discussing the point says "We want more evidence." Doubtless we do to be positively certain about them, but if we go to the human subject and take his nearest analogue to Broken-wind, Asthma, it is evident that the medical profession is decided in its opinion on the point.

Dr. Theodore Williams, in a paper on Asthma says:—"Heredity can be traced in about 40 per cent. of the asthmatics, though the tendency often does not show itself till late in life. The characteristic form of chest is often transmitted from parents to children, and even when this is not so, a disposition toward spasmodic symptoms in catarrhal attacks is often seen in the children of some asthmatics." I believe this quotation is applicable to our equine patients in every line.

The nervous division probably does not admit of much discussion, as for our purpose it includes but Shivering and Stringhalt. Megrims perhaps would readily be admitted as of strong hereditary tendency, but the fact of the impossibility of its detection in an ordinary examination, for the time renders it beyond our pale. "Shivering" is, I think, wisely included in the Council's *positive* list. Except for the disparity in their importance, that Stringhalt should not be also embraced in the same category appears somewhat of a mystery. Granted that the pathology of Stringhalt is involved in

doubt—its nervous origin is unquestioned; and of all the hereditary affections, those of the nervous system stand pre-eminent. Admit this, and a good case for the heredity of Stringhalt is at once made out.

We next come to the "bony enlargements," and among these are the same diseases about which opinions are generally so undivided, that a passing mention of them will doubtless be considered sufficient.

Spavin and Splint have long been recognised as hereditary diseases; notoriously so, too, has Sidebone, an affection well termed a curse among cart-horses in towns; yet one has grown accustomed to hearing heredity ignored, and the unfortunate two-furrowed plough accredited as being the cause of nine out of every ten Sidebones found on agricultural horses.

The hereditary tendency of Ringbone I believe to be almost equally powerful, though there are disputes on the point. Navicular disease, which may perhaps be well included here, is, I think, on all sides now acknowledged in the last degree. I have seen well-developed Navicular disease in an unbroken colt.

Of all the foregoing, Splint is the only disease about which diversity of opinion exists as to the rejection of a sire for breeding purposes. Doubtless, in many—nay, most—cases the risk involved is slight; but what I want to point out is this, the probable existence of a "bony enlargement diathesis"—a condition in which the bones appear to be only waiting for a stimulus to throw out enlargements anywhere.

Mr. Stephenson, of Newcastle, who advocates the same idea, has traced a bony deposit in the blood-vessels of a horse possessing the diathesis.

Truly, the bony enlargements are, as a rule, pretty constant in their reproduction as to situation, yet one at times sees animals in which all the changes have been rung, and inducing the idea that the exostoses develop just exactly in accordance with the amount of exertion devolving upon the various limbs and positions.

What I am leading up to is this, that the possessor of a Splint may probably, though not necessarily, be the possessor of such diathesis, and hence an undesirable animal for breeding purposes.

I moot the point simply as one allowing of consideration. Of the bursal enlargements, "Thoroughpin" has claimed the greatest attention.

Prof. Williams, with a very wide experience among Clydesdales, is particularly strong in his belief as to the heredity of this disease. Personally, I see no reason to believe that the tendency to bursal inflammation and extra secretion is not equally inheritable with many other diseases.

From this standpoint, Windgalls must of necessity be included in the list, though the frequency of the former must be greatly augmented by conformation. Here, let me state the opinion shortly, that distension of the capsule of the true hock-joint—Bog Spavin—is equally transmissible.

Blood Affections.—Certain morbid conditions of the blood seem to be imparted by parent to progeny almost unfailingly. Grease is the most important of these with which we have to deal—and its presence should positively warrant the rejection of its possessor. So, too, I think, should Eczema, though in fairness it should be mentioned that Sir Erasmus Wilson, in speaking of Eczema, says, "It is hereditary only in the sense of the transmission of natural tendencies from parent to offspring, and not by virtue of any special virus or *causa morbi*." Mr. Barford at the Council made a struggle to get Lymphangitis included in the list. I will apply Dr. Wilson's remarks quoted above to this disease, and further say that I think Mr. Barford ought to have succeeded. As bearing somewhat on this point, I may mention that Mr. Fayver, in an article upon "Elephantiasis" in the human subject, says, "Richardson found that of 236 persons, 73 per cent. had one or both parents affected."

Mallenders and Sallenders have been suggested as diseases which are hereditary. I would ask, has it been positively decided that these diseases arise from any morbid condition of the blood or skin? Many believe that they are parasitic in their origin, and until the point is finally settled it is scarcely fair to attempt to decide as to heredity. Perhaps the experience of gentlemen present may help us to a conclusion. Among the diseases of the eyes, we have, fortunately for our patients, not so wide a field for observation, as has the medical profession.

By ourselves Cataract is condemned as hereditary, with an almost unanimous voice; so too, I think, should be some forms of Ophthalmia. As illustrative of the extreme delicacy of the law of heredity in its dealings with the human eye, let me instance the frequency with which even a slight cast, not amounting to squint, in the eye of a parent is reproduced throughout a long family. The heredity of Curb, though disputed, will probably hold good upon examination; though in this instance I am inclined to consider it due more to the transmission of the conformation of the hock than to inherited weakness of either ligament, tendon, or sheath.

This brings me to the all-important question of conformation, the heredity of which in its application to unsoundness to my mind does not receive the attention its deserves. Here we have on the one hand certain diseases, upon the existence of which veterinary examiners are advised, and rightly too, to reject their possessor; on the other hand, certain conformations, in themselves far more serious than some unsoundnesses proper, and with even a stronger hereditary tendency, and upon which we have not the slightest hold whatever. And why, forsooth? Simply because their possessor is technically sound.

Gentlemen, the more I consider this matter the more do I become convinced that the word "sound," in its usual application to horses, is a pitfall and a snare. It draws a hard-and-fast line, and allows little or no room for individual opinion, and frequently lands a purchaser with a totally undesirable animal, because the said individual, having a perfect and blind confidence in the significance of the word, has committed himself to buy, conditionally upon the animal "passing sound." If possible I would obliterate the word "sound" from our veterinary vocabulary. I doubt not but that most present can recall instances in which, in the interest of a client, they have heartily wished the obnoxious word "to Jericho."

But this by the way. To return to conformation, "feet and hocks" are the points which chiefly lay themselves open to attack in this connection. Take the case of a horse with big flat feet, and the usually accompanying low and weak heels. With such feet, as a rule, a long journey on a hard road, or a sharp attack of purging, is all that is necessary to produce acute Laminitis. In this regard, then, *i.e.*, the shape of the feet, particularly after they have undergone the changes incident to the disease, do I consider Laminitis hereditary. Then, again, is the vexed question of conformation of hock. Take, for instance, the so-called "sickle-shaped" hocks, the transmissibility of which cannot be denied, although there are notable exceptions. I ask you, Is it not the rule that, given a fair amount of work, Curb is the almost inevitable result? What I hold, and that most strongly, is that we should have the power equally of rejecting animals for such conformations as for some of the diseases already mentioned.

Contracted feet and curby hocks are both, I believe, inheritable malformations, but neither *per se*, and with no lameness present, seems of sufficient importance to warrant an animal's rejection. An affection upon which I have as yet seen no comment as to heredity, is Corns. If we admit brittle feet, I think (though not that the two necessarily go together), we must also admit Corns. I would here mention that fearing undue length, I have

purposely omitted any consideration of either hereditary vices or congenital malformations.

He (Mr. BLOYE) concluded by moving the following resolution, which was seconded by Mr. J. H. PENHALE, and carried:—

“That in the opinion of the Society every horse kept for stud purposes should be licensed, and that no licenses be granted to such an animal until he has been examined by a competent Board of veterinary surgeons, who shall certify as to the animal's soundness, and if hereditary disease exists, this shall be mentioned on the license, so that breeders may know the kind of animal they are using.”

Mr. PARSONS, as did all the subsequent speakers, eulogised the paper which had just been read, and considered it well worthy of the author and the Association. He quite agreed with what the paper said on conformation; there could be no doubt as to shape and size being hereditary. But he did not at all hold that Splints and Spavins are always due to a bony diathesis. He did not think that these two diseases should come under the same category, as they often arose from distinct causes.

Mr. HEATH thought the conformation of our breeding stock might be safely left to the judges of our shows and exhibitions. He agreed that immorality and criminality leading to blindness and lunacy were hereditary. He would not, unless under special circumstances, disqualify for Splints. He believed, as did most of the other members of the Association, that Mallenders and Sallenders were forms of Grease. The time was coming, he said, when farmers, before using a stallion, would inquire for the veterinary certificate.

Mr. CHASE said it was our duty to point out to breeders the danger and loss which arose from breeding from unsound mares, especially those which had straight or sickle-shaped hocks. It was a great error to suppose that an old, unsound, worn-out, and ill-shaped mare could produce other than degenerate offspring.

Mr. BURTON did not agree that Splints were entirely hereditary, for he believed they also arose from concussion on macadamised roads and from shoeing.

Mr. W. PENHALE, junior, thanked Mr. Bloye for his very excellent paper. He said if we wished for good horses it was of the greatest consequence to breed from sound mares. He believed that vice and immorality were due far more to bad training and association than to heredity.

Mr. BLOYE said, in conclusion, that while admitting the influence of the mare, we must not forget the fact that from the mare there is only one offspring a year, whereas the sire may be the progenitor of large numbers. Therefore it is of far greater consequence that the stallion should be sound. He still thought that both Splint and Spavin were due to a bony diathesis, but he would not disqualify an animal for breeding purposes because he suffered from Splint.

The SECRETARY thought that nothing but sound horses should be allowed to be used, but, as at present, they were few, it was desirable not to press too far. In a few years, with careful breeding, there would be a better state of things. He was also of the opinion that the Government should subsidise none but sound horses, and that the recent outcry against veterinary examination was mainly due to the disappointment felt by exhibitors having their horses cast, and so losing the premium.

A unanimous and hearty vote of thanks was given to Mr. Bloye for his paper, with a request that it might be printed.

It was resolved to hold the next meeting at Exeter in October. The President then entertained those present to a *recherché* dinner.

WILLIAM PENHALE, *Hon. Sec.*

ONTARIO VETERINARY COLLEGE.

DURING the last three weeks of March the examinations of this College were in progress. The written tests always take place first, and on the 25th of this month the Board of Examiners met to hold the final orals, and to award the diploma of the Agricultural and Arts Association to the successful students. Several days were occupied in this work, as each student must go before six examiners in regular rotation.

On the 29th, all the examinations having been completed, a large meeting of students and friends of the College was held in Richmond Hall, at which the medals and other prizes were presented, and the names of the successful graduates announced. Professor Smith, F.R.C.V.S., Principal of the College, occupied the chair, and on the platform were, among others, Sir Daniel Wilson, President of University College; Hon. Charles Drury, Minister of Agriculture, Dr. Thorburn, Dr. Duncan, Dr. Peters, Dr. Caven, J. J. Witherow, Esq., President of the Industrial Exhibition Association; Major Lloyd, J. H. Wilson, V.S., C. Sweetapple, V.S., Mr. Cowan, V.S., W. Shaw, V.S., Ald. Frankland, Ald. Dodds.

Professor SMITH, in opening the proceedings, spoke of the success of the past session. He briefly referred to the fact of so many students attending from all parts of the Continent, stating that one of the graduates that day was from Honolulu, Sandwich Islands. After addressing words of encouragement and good cheer to all present, he concluded by requesting the President of University College to address the audience.

Sir DANIEL WILSON was received with applause. He paid a graceful tribute to the President of the College, Professor Smith, and referred in terms of high praise to the work this veterinary college has done. His most hearty wishes were for its continued prosperity, as he considers it to be one of the most valuable educational institutions of the country.

The names of the graduating class, with the honour and prize list, were then read, after which the prizes were handed to the successful students, and congratulatory speeches made by Hon. C. Drury, G. B. Smith, M.P.P., J. J. Witherow, Esq., Ald. Frankland, Ald. Dodds, Major Lloyd, and others.

Alderman DODDS, in the course of his remarks, stated that in his journeyings through the United States he found that the possession of the diploma of the College was a passport to the confidence of the prominent stock-breeders in all parts of that country.

There were 125 graduates, many of whom were prizemen. At the conclusion of the proceedings a pleasant feature was the presentation of a large picture of the graduates in group form to Professor Smith. The picture, which is about six feet square, with gilt bronze frame, contained the likenesses of 170 graduates. Mr. Monsarratt, of Honolulu, Sandwich Islands, made the presentation. The new college building will be proceeded with at once; it will probably be in readiness for the next session's work.

MONTREAL VETERINARY COLLEGE.

THE twenty-second session of this College was concluded on March 27th, by the final examination of the students by a Board of Examiners appointed by the Council of Agriculture. The Board was composed of Messrs. J. W. Gadsden, M.R.C.V.S., Philadelphia; Williamson Briden, V.S., Boston, Mass.; Archibald McCormick, V.S., Ormstown; J. A. Couture, V.S., Quebec; A. W. Harris, Ottawa, and Dr. James Bell, Montreal. The following students passed successfully the examinations prescribed by the curriculum of the College in the following subjects; viz., botany, histology, chemistry, physiology, materia medica, anatomy, cattle pathology, and practice and theory of veterinary medicine and surgery, and were considered by the Board fully

qualified to practise the art and science of veterinary medicine and surgery; viz., Messrs. R. D. Austin, R. Darling, G. P. Dillon, J. G. Goddard, J. G. Harris, J. McCurdy, H. McWhinnie, R. C. Mylne, J. M. Parker, Wm. M. Simpson, T. W. Skaife, and E. I. Willand.

The closing exercises took place in the College lecture-hall in the afternoon, the hall being crowded with students and friends of the institution. Col. Rhodes, Minister of Agriculture, occupied the chair, and on his right sat Sir Wm. Dawson, Chancellor of McGill University. Among those present were Messrs. S. M. Blackwood, member of Council of Agriculture; J. W. Gadsden, Provincial Board of Agriculture; Williamson Bryden, of Boston, Mass.; Prof. Wesley Mills, Prof. Penhallow, Dr. McEachren, Dr. Baker, J. X. Perrault, and a number of others interested in the work of the College. At four o'clock Col. Rhodes took the chair, and proceeded, amid continued applause, to award the prizes to the successful competitors. The following is a list of the prizes awarded:—

Silver medal, the gift of the Council of Agriculture, for the highest number of marks in all the subjects for the three years. Won by Mr. Robert Darling.

Practice of Medicine and Surgery.

1st prize, J. G. Harris; 2nd prize, E. A. Wieland.

Cattle Pathology.

1st prize, E. A. Wieland; 2nd prize, H. McWhinnie.

Anatomy.

1st prize, Wm. M. Simpson; 2nd prize, H. McWhinnie.

Special prize given by Prof. Wesley Mills, for his efforts in connection with the study of comparative psychology, to J. M. Parker.

Prize awarded by Prof. J. A. Couture, for best oral examination in the practice of medicine and anatomy, won by Henry McWhinnie.

Juniors.

Physiology—1st, R. N. Walsh; 2nd, J. F. Scott.

Chemistry—1st, J. F. Scott; 2nd, M. Hayman.

Materia Medica—1st, A. M. York and J. F. Scott, equal; 2nd, R. N. Walsh.

Anatomy—1st, A. M. York.

The prizes having been awarded, Sir Wm. Dawson was called on, and at the commencement of his address referred very touchingly to the death of Dr. R. P. Howard, Dean of the Medical Faculty of McGill. He spoke of the deceased as a man of excellent qualities, and felt deeply grieved at his death. The veteran Chancellor of McGill paid a high compliment to the Montreal Veterinary College, and said it was a valued and important institution, and deserved all credit in the work, which is of a highly practical kind. He was glad that McGill was able to do something towards carrying on this important work. He believed that McGill would welcome closer connection with the Veterinary College, recognising the growing importance of veterinary science. Personally he was much in sympathy with the school, whose studies occupied a very high place in practical science.

Col. RHODES, Minister of Agriculture for the Province of Quebec, addressed the assemblage, and in the course of his remarks said that the education of men in agricultural pursuits is a very important study. He said he owed the position he now holds to his knowledge of all the details of agriculture. He stated that the Provincial Government wants to improve the position of the veterinary profession, and expressed a desire to have the Veterinary College more closely allied with the Agricultural Department of the Government, which is a most natural position for it to hold, and the outcome would be very beneficial. He offered to the College the services of the provincial lecturers on agricultural branches, should their services at any time

be needed by the College. The gallant Colonel promised to give his hearty support to the institution, both in his official capacity and as a private citizen.

Mr. S. M. BLACKWOOD, a member of the Council of Agriculture and one of the examiners, spoke highly of the graduating class. He commented on the fact that too many of our veterinary surgeons went abroad when their services were much required at home. He said some effort should be made to keep the graduates at home.

Mr. J. W. GADSDEN congratulated the men on the profession they had chosen and on the school they had selected wherein to pursue their studies. As one of the examiners, he spoke very highly of the manner in which the graduating class had acquitted themselves in their examinations. He denounced the manner in which some so-called American colleges granted diplomas to men who had been able only to get a mere smattering of the knowledge required by a Veterinary surgeon, and characterised it as very unfair, and thought some change should be effected so as to guard the public and the profession as well.

Mr. WILLIAMSON BRYDEN eulogised the Montreal Veterinary College as having attained an eminent position among colleges of its kind in the country.

Mr. J. X. PERRAULT was called on, and gave an excellent and practical address. He forcibly pointed out the claims of the College on the Government and on the people.

Mr. F. W. SKAIFE, one of the graduates, gave the valedictory address, which was a good one, the subject being treated as viewed by the men who are about to go forth to enter upon the duties of their profession. The address treated the veterinary question on a commercial basis, and dwelt on some advantages in that line. It also treated of the veterinary profession in its relation to, and standing among, the sciences. The study of human and animal life could not easily be separated, and as the study of the latter becomes more advanced the relation of the two becomes more apparent. The address also treated of the profession in its relation to society. The valedictorian was greeted with hearty applause from the students' benches, as well as from the platform.

Dr. McEACHRAN made a few remarks, and referred feelingly to the death of Dr. R. P. Howard, who for years past was a regular attendant at the Convocation exercises, and whose absence was much felt. He said the Veterinary College was much indebted to McGill University and the Provincial Government for aid in carrying on the work, and without which they would be sadly off. He said it would be a great honour for the College to be taken under the wing of McGill and made a faculty of that University.

Professors WESLEY MILLS and PENHALLOW were called for, and both responded by making a few remarks. Professor Mills spoke very highly of a paper on Comparative Psychology by Mr. J. M. Parker, for which he received a prize, and expressed a desire to see the paper published.

At the close of the Convocation exercises the Montreal Veterinary Association and the Society for the study of Comparative Psychology met, and each Society granted its diplomas to the graduates.

PATHOLOGICAL SOCIETY.

At a meeting of this Society on April 2nd, Mr. W. G. SPENCER showed a large series of bones which had been obtained at the Brown Institution, and read a paper on them. He commenced by giving an account of the clinical symptoms which had been given to him by Mr. Thomas Busbie, the resident officer of the Brown Institution. The animals were first noticed to waste, and to have difficulty in feeding; symmetrical swellings formed on the lower jaw, between the angles and the teeth, and frequently also swellings at the

ends of the long bones. In the later stages the bones became still more thickened, the ingestion of food became impossible, and the animals died of starvation. The disease was most frequently found in goats that were kept for milking purposes in London, where they were fed upon corn or cooked vegetables or garbage, instead of coarse grass and hay, their natural food. The pathological conditions could be divided into three stages: (1) Early stage, where the bones of the jaws were soft, and in which there was a pale pinkish growth which took the place of bone, and formed swellings which, in the lower jaw, might become two inches thick. On microscopical examination this growth was found to consist of large, oval, multinucleated cells, scattered amongst the trabeculæ of the bone. The trabeculæ gradually disappeared, and left the large cells scattered about and enclosed within a very thin shell of bone. There were no signs of connective tissue formation, nor were there any hæmorrhages. The growth was entirely confined within the periosteum, which was stretched over it. The bones of the upper jaws were similarly affected to those of the lower jaw. The flat bones of the skull were softened and affected by similar growth. (2) In the long bones the ends of the diaphyses were affected by similar growths to those in the jaws. The shafts retained their hardness, and showed no tendency to spontaneous fracture in the early stages, but in advanced cases the long bones could be cut by a knife, and after maceration had a light, spongy, worm-eaten appearance. (3) The joints contained some blood-stained fluid, and the synovial membranes were of a gelatinous character. The articular cartilages were of a slaty-blue colour and partially eroded. These changes came on early in the disease, and might pass off before death occurred. Mr. Spencer showed for comparison the skull of a horse from the museum of the Royal Veterinary College which was similarly affected. The skull was very light, and the bones, especially those of the upper and lower jaws, were enlarged, spongy, and worm-eaten. The disease in horses had been described by Dr. George Harley in the *Path. Soc. Trans.*, vol. xi. The clinical characters were very similar to those of the disease in goats. He showed for comparison the bones of a goat which had suffered from osteomalacia, and gave a description of the symptoms and pathological changes in this disease. He considered that the disease which he had described was not rickets, as the course was different, and the epiphysial cartilages in the young animals were normal. The disease had no relation to actinomycosis, and no micro-organisms had been discovered. Although little light could yet be thrown upon the causation of this disease, yet if it formed a link in any way between the various general diseases of bone above alluded to, it might elucidate the causes of these diseases, which were at present involved in obscurity.

The PRESIDENT remarked on the various causes that were antecedent to the disease, and especially that it was not entirely due to civilisation.

Mr. BLAND SUTTON did not consider the disease to be the same in goats and horses; he thought the disease in goats was essentially a form of rickets, which picked out in these animals the membrane bones rather than those which were preformed in cartilage. He referred to a series of cases of this disease in goats that he had published in the *Odontological Society's Transactions*. It had been shown that the late eruption of the teeth in rickets was owing to the large size and crowded condition of the tooth follicles. In ruminants the tooth follicles were unusually large, and he thought that the condition described by Mr. Spencer in the jaws might be considered as fibrous odontomes. Six weeks ago he (Mr. Sutton) had described an odontome due to rickets, from a human subject, which he had found in the museum of the Royal College of Surgeons. The disease in goats was not invariably fatal, as a Himalayan goat, which used to be in the Zoological Gardens, had lived for twelve years, and when it died two large tumours in

each upper jaw were found which had suppurated, and were found to contain 200 small denticles, the soft contents having decayed away.

Mr. STEPHEN PAGET thought the disease under discussion was entirely different from rickets, and asked Mr. Spencer if he had seen any goats which suffered from the type of rickets which was commonly found in children. He asked Mr. Sutton: 1. Why he separated the disease of goats from that of horses. 2. Whether he could account for the disease in goats being more prevalent at one time of the year than another.

Mr. BLAND SUTTON replied that rickets manifested itself differently in different animals; that in bears and lions the ordinary epiphysial changes and the masses in the jaws were found together.

Mr. SPENCER, in reply, said that the manifestations of the disease which he had described were certainly different from those which were known as rickets in human pathology; whether the causation was the same or not he was not prepared to say. The disease was both clinically and pathologically the same in goats and horses, and the disease was invariably fatal in goats.

ROYAL AGRICULTURAL SOCIETY.

At the Monthly Meeting, held on March 27th, Sir JOHN THOROLD announced that Professor Brown had presented the following report:—

"Pleuro-pneumonia."—The recently published returns show a decrease in the number of outbreaks of this disease. During the three weeks ended March 16th there were twenty-two outbreaks reported: fourteen of these were in England, in the counties of Cumberland, Kent, Lancaster, Middlesex, Norfolk, Oxford, Surrey, York (West Riding), and the Metropolis; the remaining eight outbreaks occurred in Scotland—six were in Edinburgh, one in Fife, and one in Perthshire. The number of cattle attacked in Great Britain were ninety-seven, of which seventy were in England, and twenty-seven in Scotland. In addition to the above, 428 healthy cattle which had been exposed to infection were slaughtered.

"Anthrax."—There have been only five outbreaks of this disease reported in the three weeks; seventeen cattle were attacked.

"Swine Fever."—The decrease in the number of outbreaks of this disease continues: 195 outbreaks were reported in three weeks, an average of 65 per week, whereas the outbreaks in the preceding nine weeks were over 70 per week. The number of swine attacked amounted to 1,174: of the diseased swine 575 were killed, 540 died, 126 recovered, and 352 remained alive when the last published return was made up.

"Foot-and-mouth Disease."—Owing to the discovery of Foot-and-mouth Disease among German sheep landed at Hartlepool and Deptford, an Order of Council was passed on Saturday, to come in force at once, prohibiting the landing in this country of animals from Germany.

"Since the Order was passed the disease has been discovered among German sheep at Grimsby and Hull."

The conference on the subject of cross-Channel traffic in cattle between representatives of the three national agricultural societies, had been arranged for Thursday, the 28th instant, at 10.30 a.m. The Order of the Privy Council as to the admission of cattle from the Netherlands without subjection to quarantine was laid upon the table. A letter had been read from the Royal College of Veterinary Surgeons, forwarding a copy of the following new bye-law, which had been adopted at a special meeting of the Governors of the College held on the 21st inst.:—

"Subject to the prescribed approval and election, members of the Royal Agricultural Society of England who contribute (to the College), one guinea per annum shall, during the continuance of their subscription, be deemed subscribers to the College, and be entitled to the privileges of subscribers."

The Committee recommended that the thanks of the Society be given to the Royal Veterinary College for their courtesy and liberality in this matter. Professor Brown had presented the quarterly report of the Royal Veterinary College, which was ordered to be printed with the proceedings of Council.

The report is as follows :—

*Quarterly Report of the Royal Veterinary College, by Professor Brown, C.B.,
Principal of the College.*

An outbreak of Tuberculosis among cattle and swine was investigated in the beginning of the year. The disease was first noticed in September, 1885. It re-appeared in the summer of 1888, and a valuable heifer showed signs of the affection after calving twin calves. The heifer died a few months afterwards, and both of the calves subsequently became affected and were killed. Another heifer showed symptoms of the malady soon after calving, and was killed. In this case the disease was in a very advanced stage. The calf also was found to be affected when killed at five months old. A number of pigs were fed on the milk (skim) from the cows, and about twelve of them suffered from what was believed to be tubercle.

Two cows and two pigs were sent to the College for observation. Both of the cows presented the wasted appearance and other signs of tuberculous disease--the tubercle bacilli could be detected in the milk, and rabbits fed on it did not suffer in consequence. The pigs were in poor condition, but fed well and gradually improved. All the animals were carefully examined *post mortem* in the middle and end of February. One cow died, the other was killed, and also the two pigs.

In the first cow a mass of tuberculous deposit was found in one lung, but no trace of tubercle was detected in any other part, and the fœtus which was found in the uterus was perfectly free from tuberculous deposit. A large tumour was found in the liver of the cow, and this was the immediate cause of the animal's death.

In the second cow no tuberculous deposit was found in any part of the body. The disease from which the animal suffered was Distomatiasis, due to a large nail about 4 in. long, which had been at some time swallowed and had passed through the walls of two compartments of the stomach, and set up inflammatory action, resulting in the formation of an abscess. The case was extremely interesting, affording, as it did, clear evidence of the fact that some of the most characteristic signs of tubercle may exist as a result of chronic disease of important organs, without any trace of tubercle being present. In reference to the pigs, it may be stated that no sign of tubercle was observed in any of the organs.

The *post-mortem* examinations and microscopical investigations were conducted by the Demonstrator of Bacteriology at King's College.

In the beginning of February an outbreak of disease among sheep in Hertfordshire was the next subject of inquiry. The flock consisted of 150 mixed bred fattening sheep, bought in September last. Previous to this no sheep had been kept on the farm for several years. Early in January the whole flock, on the appearance of Scab, were dipped in an arsenical dip. This process not proving effectual in a week, many of them were "salved" with mercurial ointment. Soon after the latter application a considerable number showed signs of illness, and several died. At the time of the inquests there were about twenty affected, and two dead.

The most remarkable symptoms were great depression, salivation, grunting, short, jerky, and apparently difficult breathing. On the skin there was a large quantity of ointment of a blue colour resembling common mercury ointment.

Examination of the carcasses revealed also a large amount of blue ointment on the skins. The skin, however, gave little evidence of disturbance. Some of the viscera had undergone marked degenerative change, notably the kidneys and liver. There was congestion of the mucous membrane of the mouth, and true stomach. Three carcasses sent to the College revealed similar changes, and on the tissues of one chemically analysed, traces of mercury were found. The ointment found on the skin was largely composed of mercury.

The foregoing facts proved that the illnesses depended on the mercurial application, and discontinuance of the ointment was therefore advised, and the removal from the skin, where practicable, of what was to be found on it. These measures were successful in checking the progress of the disease.

A disease appeared among swine in Sussex attended with considerable mortality, and it was at first believed that Swine Fever had broken out. The progress of the affection was not sufficiently rapid to support this conclusion. Some morbid parts from pigs dead of the disease were sent to the College, and it was ascertained that the characteristic lesions of Swine Fever were absent. The veterinary surgeon in attendance finally came to the conclusion that the animals had suffered from exposure to cold.

Cases of premature birth in a flock of ewes in Sussex following in the death of a large proportion of the ewes came under observation. It was alleged that the alarm caused by the incursion of a foxhound puppy was the direct cause of the fatality. But Professor Axe, who investigated the matter, ascertained that the incident had happened several weeks before any case of illness occurred in the flock ; and further it appeared that flocks in farms in the same district had suffered in like manner. From the evidence it was suspected that the cases of premature birth were due to some deleterious elements in the food, and the discovery that the sheep had been supplied for some time past with mouldy hay, lent some support to this presumption. It was advised that this mouldy hay should not be given to the sheep, and since its disuse no further cases have occurred.

A severe form of catarrhal disease among sheep in Surrey was recently investigated, and from the symptoms exhibited by the diseased sheep, it was concluded that they had suffered from the presence of "bots" in the sinuses of the head. The irritation was probably caused by the migration of the parasites from their position in the nostrils. This case is still under observation.

There are at present in the College Infirmary cases of the following diseases of cattle and sheep :—

Husk in calves and lambs.
Abortion in ewes.

Actinomycosis in cattle.
Hydatid in brain of sheep.

Experiments are being conducted to test the action of certain organisms found in Swine Fever ; also to further test the communicability of human Tuberculosis to cattle and other animals.

Inoculation of calves with the virus of Black-leg with the view to ascertain the most simple and efficacious method of protecting them from the natural disease is being carried on. During the quarter a variety of morbid specimens have been received at the College, and used for illustrating the lectures in the several diseases of cattle, sheep, and swine, and eleven animals have been received into the College alive and have died or been slaughtered for *post-mortem* examination.

Mr. JACOB WILSON, Before the report was adopted, asked permission to say one or two words. When the Veterinary Report was presented a month ago, he ventured to sound a note of alarm at the action of Her Majesty's

Government in having removed the prohibition against the importation of Dutch cattle. He was perfectly aware that the resolution had not been come to without very serious consideration, and practically with every justification for the action taken, and he was also aware that it was strictly in accordance with the Act of Parliament which regulated the matter. Since, however, that had taken place, they had to listen to a much more serious item of information which had just been read by the Chairman of the Veterinary Committee. In spite of the great care taken by the authorities of this country, Foot-and-mouth Disease, from which the country had been freed, had once more been imported from Germany. He confessed that he regarded this with some degree of dread, and more particularly in view of the recent removal of the prohibition against Holland; because, whilst they might be perfectly safe with regard to Dutch cattle *per se*, they were not quite certain as to the restrictions which existed between Holland and Germany. (Hear, hear.) He had no desire whatever to create a panic in the agricultural world, by anything he might say; but on the contrary to remove apprehension by more specific information. He was glad to see Professor Brown present that morning, and he should like to ask him the two following questions:—1. What restrictions are, or have been, recently in existence with regard to the introduction of animals from Germany into Holland? 2. Whether in consequence of the recent outbreak of Foot-and-mouth Disease in Hamburg, any additional restrictions have been imposed by the Dutch authorities?

Professor BROWN, in reply, said that the two questions asked by Mr. Wilson could be answered in extremely few words. In regard to the first, he (Prof. Brown) might tell the Council that Holland had for years past prohibited the entrance of German cattle on account of Cattle Plague, and for the further reason that England had prohibited German cattle since the outbreak of Cattle Plague in 1877. But Holland had allowed the transit of German sheep for a considerable period, and so long as they permitted the landing of animals from Holland for slaughter, there was no reason why it should be discontinued. But when Holland became free from disease the Dutch Government made an effort to get their cattle and sheep imported without being subject to slaughter or quarantine. In order to do this, they were compelled to prohibit from all countries in which disease existed. Under these circumstances the Privy Council had no option in the matter. The outbreak of Foot-and-mouth Disease had occurred in Hamburg, and diseased sheep had been sent from that port and from Bremen. Holland was in the position that she had already prohibited from Germany in common with other countries. They had had no communication with the Netherlands Government since this outbreak occurred, but he thought he might say without hesitation that no more restrictions could have been imposed upon the importation of foreign animals by the Dutch Government than were already in force. The prohibition was total, as it had been before this outbreak of Foot-and-mouth Disease in Germany occurred.

Colonel KINGSCOTE said he looked upon this as one of the most serious things that had taken place for some time, and he hoped that it would be stopped at once. If not, it would be a terrible thing for agriculturists. He suggested that a resolution should be adopted and forwarded to the Privy Council.

Lord EGERTON of TATTON said that restrictions were imposed upon animals coming from Germany to Holland; but as Foot-and-mouth Disease might be communicated by those who had attended the animals there was that danger in England, and the same thing might happen with respect to the importation of cattle from Germany into Holland.

Mr. STRATTON said no action could be too strong on the part of the Society,

and he thought they would be strengthening the hands of the Government in passing a resolution on the subject.

Mr. ALLENDER said that Holland was as much interested as any other country in keeping out the disease. They had very valuable cows and herds, and therefore took good care of themselves. There was no country more particular. He had himself found it impossible to send cows to Germany *via* Holland.

The Duke of RICHMOND and GORDON stated that he was present at the meeting of the Committee of Council on Agriculture, which passed the Order allowing animals to come from Holland, and that with the Act of Parliament before them, and with the evidence produced to them by the Dutch Government, it was perfectly impossible to come to any other conclusion. The clause was imperative; it said that when the Dutch Government should show that they had taken and are taking such precautions against the admission of disease into that country, and that there was a total absence of any disease in that country, then they must be allowed to send the cattle here. There was no question about it. But he thought possibly it might meet the views of Colonel Kingscote and others if a letter were written, signed by his Royal Highness the Acting President calling the attention of the Privy Council to the fact that an outbreak of Foot-and-mouth Disease had occurred in Germany, and that sheep affected with that disease had been landed in this country; and requesting the Privy Council to consider whether in these circumstances they were still of opinion that the precautions taken in Holland were sufficient for the purpose. (Hear, hear.) He thought that was the utmost they could do. He did not think it would be wise to recommend the Privy Council to withdraw that which they had had to pass the other day very reluctantly.

Mr. WAKEFIELD having asked what steps had been taken by the local authorities at ports in the kingdom to prevent the importation of the disease,

Professor BROWN replied that the matter was entirely in the hands of the Privy Council, and assured the Council that everything possible had been done. The sheep had all been slaughtered with the greatest rapidity since Saturday last; and every possible precaution had been adopted to secure the complete disinfection of the persons employed in slaughtering the animals affected by the disease.

The Duke of RICHMOND added that in justice to the Agricultural Department, it should be mentioned that although the intelligence of the outbreak of Foot-and-mouth Disease only reached the country about midday on Saturday last, the Order was passed by the Privy Council by 4 o'clock the same day.

It was then agreed that a letter in the sense suggested by the Duke of Richmond should be addressed to the Lord President of the Council in the name of the Society, and his Royal Highness the Chairman consented to sign such letter as soon as prepared.

Army Veterinary Department.

Gazette, April 16th.

Veterinary Surgeon Thomas Caldecott resigns his commission, dated 17th April.

Veterinary Surgeons Ewing, Walker, Ringe, and Burke have arrived in England from India after a tour of foreign service. Veterinary Surgeon Appleton has arrived from India on sick leave. Veterinary Surgeon Murray

Anderson has embarked for a tour of service in Egypt, to take the place of V.S. Griffith, who is seconded for service with the Egyptian Army, *vice* V.S. Beech, who has received a lieutenant's commission in the 21st Hussars.

Obituary.

THE death is reported of J. B. Jones, Ludlow, Salop, who graduated in 1837.

The veterinary profession in Italy has sustained a heavy loss by the death of Professor Vallada, who was Director of the Veterinary School at Naples, and previously of that at Turin.

Notes and News.

BIRD SURGERY.—Some most interesting observations made by M. Fatio on the surgical treatment of wounds by birds, were recently brought before the Physiological Society of Geneva by Dr. Snipe, a surgeon, whose name is a curious coincidence. It was stated that the snipe had often been observed in repairing damages. With its beak and feathers it makes a very creditable dressing, and even has been known to secure a broken limb by means of a stout ligature. On one occasion M. Fatio killed a snipe which had on the chest a large dressing, composed of down from other parts of the body, and securely fixed to the body by coagulated blood. Twice he had had snipe with interwoven feathers strapped on to the site of a fracture of one or other limb. The most interesting example was that of a snipe both of whose legs he had unfortunately broken by a misdirected shot. He only recovered it on the following day, when he found that the poor creature had contrived to apply dressings and a sort of splint to both limbs. In carrying out this operation, some feathers had become entangled around the beak, and not being able to use its claws to get rid of them, it was almost dead from hunger when found. In a case recorded by M. Magnin, a snipe which was observed to fly away with a broken leg was subsequently found to have forced the fragments into a parallel position (the upper fragment reaching to the leg joint), and they were secured there by means of a strong band of feather and moss intermingled. The observers were particularly struck by the application of a ligature of a kind of flat-leaved grass, wound round the limb in a spiral form, and fixed by means of a glue-like substance.

LONGEVITY OF MICROBES IN WATER.—In a note recently published by Drs. Straus and Dubarry, on researches into the duration of life of pathogenic microbes, the authors obtained the following results:—A great number of pathogenic microbes possess the faculty of living in water for a period more or less long. They therefore do not differ much in this respect from aquatic bacteria. The chemical composition of the water is not of much importance, as these pathogenic microbes live as long in distilled water as in water charged with organic or inorganic matters. These microbes do not appear to lose much of their virulent properties in a medium but little charged with nutritive principles, excepting, perhaps, the bacillus of Tuberculosis. The following are given as examples:—The bacillus of Charbon was found living in water after 131 days, where it formed spores; that of Typhoid Fever after eighty-one days; that of Asiatic Cholera after thirty-nine days. Even this duration of life is probably not the maximum.

A HORSE WEARING SPECTACLES.—Strange stories are sent us for acceptance by our friends across the sea. The *American Druggist* tells of a horse

that wears spectacles. The farmer who owned him having come to the conclusion, from various symptoms, that the animal was short-sighted, got an oculist to take the necessary measurements, and had a pair of spectacles manufactured for him. They are made to fasten firmly into the headstall, so that they do not shake out of place. At first, the horse appeared startled by this addition to his harness, but he soon got used to his glasses, and liked them. "In fact," says his owner, "when I turn him out to pasture he feels uneasy and uncomfortable without his goggles, and last Sunday he hung round the barn and whinnied so plaintively that I put the headstall and goggles on him, and he was so glad that he rubbed my shoulders with his nose. Then he kicked up his heels, and danced down to the pasture. He could see what he was going to eat then."

ACID SUBLIMATE AS AN ANTISEPTIC.—Dr. Laplace has discovered that the addition of an acid to the solution of corrosive sublimate increases its power as an antiseptic to such an extent that it may be used thus in much weaker solution than has hitherto been the case. The author has made a considerable series of experiments in which the bichloride of mercury solution was used as an antiseptic for surgical dressings, such as gauze, cotton wool, linen bandages, etc. Now it appears that in such cases albuminate of mercury is often formed, which is insoluble, and the antiseptic dressing ceases to act. To avoid this Dr. Laplace adds an acid, and gives the preference to tartaric acid; he assures us that this causes no irritation to the wound. The solution in which the gauze, cotton, or linen is steeped is composed as follows:—Corrosive sublimate one gramme, tartaric acid five grammes, distilled water one thousand grammes. The author has proposed even a stronger solution than this for steeping the dressings, but in view of the numerous accidents which have occurred in using bichloride of mercury as an antiseptic it is necessary that this extremely poisonous salt should be used with the greatest care.

BERLIN VETERINARY UNIVERSITY.—Professor Dr. Schütz, of this University, has been appointed Rector for three years—from 1889 to 1892.

"LOCO-POISONING."—The ranchmen of Kansas and Texas have suffered serious loss, owing to the prevalence of a peculiar train of symptoms, commonly ending in death, which have been for some years observed to affect cattle and horses in certain districts. The animal affected loses flesh, has a feeble, staggering, uncertain gait, a rough coat, and general appearance which is said to be characteristic; it loses all sense of distance or direction, and is liable to fits of rearing, plunging, and wild excitement; pregnant animals drop their offspring prematurely. It is known as the Loco, or crazy disease, and is believed to be caused by eating a plant which is generally identified as the *astragalus mollissimus*, and is commonly known as the loco-weed. The liking for the plant is an acquired taste, but, once formed, only strict confinement in a pasture free from the weed can eradicate it. In one county of Kansas alone five hundred horses and cattle have died in this way, but Dr. H. C. Wood, of Philadelphia, and Mr. Kennedy, of Texas, both failed, by experimenting on animals, to prove that the plant was poisonous; the latter, however, quoted a Mexican belief that it was poisonous to human beings, producing a condition resembling insanity, and ending in death. The Mexican señoras, it was said, sometimes get rid of an inconvenient husband by administering draughts of the fatal decoction. In spite of the failure of the experimenters, the belief in the poisonous qualities of the loco-weed gained ground, and now Dr. Mary Gage Day has published some fresh experiments, which gave very definite results. She used a decoction of roots, leaves, and stems, gathered in September, and gave rather large quantities to cats and kittens with their food; all the animals became affected, the kittens sooner than the cats, with

symptoms closely corresponding with those observed in "locoed" horses and cattle. The "jack-rabbit" of Texas, it was found, quickly acquired a liking for the plant, suffered from the same symptoms, and died in ten days. Dr. Day makes an observation which may explain the failures of other experimenters; she is convinced, from experiments made with materials gathered in different months, that the greatest amount of poison is present in the autumn and winter, after the seeds have ripened; it is at these seasons also that the disease is most rife.

A SUPPOSED BACILLUS OF CANCER.—Professor Platon I. Kubasoff, of Moscow, has carried out a long series of bacteriological researches on malignant (cancerous) new growths, and has arrived at the following conclusions:—
 1. The disease is caused by a special pathogenic rod-shaped microbe. 2. The bacilli have slightly ovoid outlines, and are arranged mostly in pairs and little heaps, their length amounting to one-fourth of the diameter of a red blood corpuscle. 3. In a pure cultivation the rods grow best on coagulated blood-serum at the body temperature. 4. When inoculated under the skin in animals, the microbe gives rise to a cancerous degeneration, commencing in the nearest lymphatic glands, and subsequently spreading to the internal organs, especially to the mesenteric glands, omentum, liver, and pericardium. In all the organs genuine cancerous nodules are formed. 5. Of lower animals, rabbits and cats prove to be most sensitive in regard to the bacterium. When inoculated they die in one or two months from cachexy, with generalisation of cancerous foci all over the body. 6. All cancers (of any variety and any organs) seem to be caused by one and the same bacillus.

ROYAL ACADEMY.—Our readers will be gratified to learn that Veterinary Surgeon Adrian Jones, 2nd Life Guards, has been again successful in having one of his works of art admitted for exhibition this year. This is the fourth year in which he has been an exhibitor, and this time also it is a statuette. The subject is named the "Standard Bearer," and represents a trooper of the 2nd Life Guards in the act of pulling up his horse, and at the same time holding aloft the standard he carries, in order to rally his regiment after the charge at the Battle of Waterloo. He is in the uniform the Household Cavalry wore in those days, and the attitude of horse and man are most excellent—full of animation and *verve*. The horse is exceedingly well modelled, and so faultless and graceful is it portrayed that one cannot help regretting Mr. Jones was not employed to model the horse for the Duke of Wellington's statue at Hyde Park. It would have been a very different affair to the lifeless, wooden-like animal Mr. Boehm has straddled the Iron Duke across; and we fancy our colleague could also have furnished less comical-looking supports than the four soldiers which figure at each corner of the pedestal, and who appear to be suffering from acute Opisthotonos. Mr. Jones is to be heartily congratulated on his success as a modeller and an exhibitor.

DOGS IN HOSPITAL.—The story of the canine patient of King's College Hospital finds something of a pendant in the following, which is sent to the *Spectator* by Miss Helen M. Sturge: "A week or two ago, the porter of the Bristol Royal Infirmary was disturbed one morning, about half-past six, by the howling of a dog outside the building. Finding that it continued, he went out and tried to drive it away; but it returned and continued to howl so piteously, that he was obliged to go out to it again. This time he observed that one of its paws was injured. He therefore brought it in and sent for two nurses, who at once dressed the paw, and were rewarded by every canine sign of gratitude, including much licking of their hands. The patient was 'retained' for two days, during which time he received every attention from those inside the house, and from the neighbours outside, who quickly heard of the case. As no one appeared to claim the dog, he was sent to the

Home for Lost Dogs in the city, where so interesting an animal was, of course, not long in finding a purchaser. The dog was one of those called 'lurchers.'" Miss Sturge adds: "I have myself called on the porter of the infirmary for confirmation of the story, and am assured by him of its truth. How did an apparently friendless dog know where to go for surgical aid? The case differs from that of the dog which took its friend for treatment to King's College Hospital, in London, for I understand that the King's College dog had previously been taken to the hospital for treatment itself, but in this case there is no such clue."

THE DISHORNING OF CATTLE.—In the Queen's Bench Division, recently, the case of *Ford v. Wiley* was argued before the Lord Chief Justice and Mr. Justice Hawkins. Appellant, who is in the employ of the Society for the Prevention of Cruelty to Animals, appealed against a refusal of the Norfolk magistrates to convict the respondent, a farmer, under 12 and 13 Vict., chap. 92, for dishorning several oxen. The Court declared that they had most clearly and distinctly decided to give judgment reversing the decision of the Norfolk magistrates, and declaring the practice of dishorning to be unlawful. They would give their judgment and reasons in writing next term.

PASTEURISM IN TURKEY.—From a report recently issued by Dr. Zoeros, Medical Superintendent of the Pasteur Institute at Constantinople, it appears that between May 1st, 1887, and March 1st, 1889, forty-one patients were treated. Of these, twelve had been bitten by animals experimentally proved to have been rabid; twenty-six by animals in which the disease was recognised by medical men, veterinary surgeons, "or other competent persons"; and three by animals in which Rabies was suspected. Fourteen of the cases were treated by the simple, and eighteen by the intensive, method, while in nine the "mixed" procedure was adopted. No death has occurred, nor have there been signs of the development of Hydrophobia in any of the cases.

THE BACTERIOLOGY OF TETANUS.—Professor Bizzozero has just submitted to the Royal Medical Academy of Turin the results obtained by Professor Tizzoni of Bologna and Signora Giuseppina Cattani on the bacillus tetani. These investigators took their material from a patient in the surgical wards, the victim of a fracture the seat of which had been contaminated by soil from the ground on which he had fallen. Traumatic tetanus of the most characteristic kind had ensued. Experiments made with the living blood in great quantity, with the median nerve and medulla of the bone taken a little above the point of fracture immediately after amputation of the limb, and also with the brain and spleen after death, yielded negative results, both with the cultures and the experiments themselves. From the material taken from the osseous surfaces of the fracture and from the soft parts immediately contiguous, there were obtained other micro-organisms and the "bacillus spilliformis" of Nicolaier. These latter, inoculated in animals, produced tetanus, followed by death after twenty-four or forty hours. Left to themselves for three months in blood serum slightly solidified at a low temperature, there was again obtained from their inoculation distinct tetanus. Cultures of this liquid yielded a coccus, a short bacillus, and the bacillus of Nicolaier. Such colonies become so intimately fused with others that not seldom the transplantings from them turn out impure. This result probably accounts for the findings of Drs. Belfanti and Pescarolo. In any case Drs. Tizzoni and Cattani are the first, according to Professor Bizzozero, who have obtained a pure culture of the bacillus tetani, and who have kept it such throughout successive transplantings. The sequel of their researches will be awaited with special interest.

Correspondence.**DO BOVINES PERSPIRE?**

SIR,—If Mr. Brett would only take the trouble to microscopically examine the skin of oxen, he would no longer want to rely on the authority of others, and he could prove conclusively that the views he now holds are as erroneous as his ignorance of bovine perspiration.

I am surprised that one having had such a long and extensive experience as Mr. Brett not being able to practically differentiate cutaneous respiration from perspiration.

I would suggest to Mr. Brett to study a series of cases of sweating seen in cattle; and then, no doubt, he will find that owners of animals and writers to medical journals do sometimes make use of "familiar expressions" that are scientifically correct.

Stratford, E., *April 8th.*

HENRY GRAY.

INDIAN SKIN DISEASE.

DEAR SIR,—Would you kindly allow me to make the following corrections on my paper on the "Indian Skin Disease" as given in your March number:—

On page 157, in the third line from the bottom, read "sudoriferous" for "endorifous."

On page 161, in the 25th line from the top of the page, "cured in from four to fourteen days" should have been written, instead of "cured in fourteen days."

On page 162, in the 18th line from the top, for "spread" read "presence."

On page 162, in the 5th line from the bottom, for "being" read "been."

On page 165, in the 15th line from the top, for "large" read "small."

On page 166, as "7," "Constitutional treatment, when necessary," might be added.

A. J. HASLAM, A.V.D.

Karachi, *March 27th.*

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from H. Gray, Stratford; R. Sturge, Ontario; R. J. Dawson, Essex; A. J. Haslam, Karachi, India; Professor Smith, Ontario; T. W. Spranklin, Baltimore; W. Penhale, Holesworthy; S. Villar, Harrow; L. Gooch, Stamford; A. W. Hill, London; R. Rutherford, Edinburgh; J. Adams, Warminster; J. A. Meredith, A.V.D., Mhow, India; P. R. Gordon, Queensland.

BOOKS AND PAMPHLETS: *Bulletin des Séances de la Société Nationale d'Agriculture de France*; *J. Wortley Axe*, Vesical Calculus; Critical Review of Professor Brown's Report on Eruptive Diseases of the Teats and Udders of Cows in Relation to Scarlet Fever in Man; *P. Mégnin*, Elevage et Engraisment des Vollailes; *G. C. Haubner*, Landwirthschaftliche Thierheilkunde.

JOURNALS, ETC.: *Journal of Dosmetric Medicine*; *Archiv fur Wissenschaftliche und Praktische Thierheilkunde*; *Deutsche Zeitschrift für Thiermedizin und Vergleichende Pathologie*; *Clinica Veterinaria*; *Repertorium der Thierheilkunde*; *Annales de Médecine Vétérinaire*; *Echo Vétérinaire*; *British Medical Journal*; *Recueil de Médecine Vétérinaire*; *Indian Medical Gazette*; *Lancet*; *Journal de Médecine Veterinaire et de Zootechnie*; *Journal of the National Agricultural Society of Victoria*; *Thierarzt*; *London Medical Record*; *American Live Stock Journal*; *Revue Vétérinaire*; *Edinburgh Medical Journal*; *American Veterinary Review*; *Live Stock Journal*; *Hufschmied*; *Mark Lane Express*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Medical Press and Circular*.

NEWSPAPERS: *Hon.eward Mail*; *Montreal Herald*; *Surrey Gazette*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JUNE, 1889.

AN INTERESTING CASE OF MOUTH RESPIRATION IN A FOAL.

BY THOMAS GOODALL, M.R.C.V.S., CHRISTCHURCH, HANTS.

It is generally admitted to be an established fact that the horse cannot respire through the mouth. The following case may therefore be of sufficient interest to be placed upon record, as demonstrating that, under certain circumstances, this prevalent idea may not be correct.

On Sunday, April 7th, I was asked to see a foal which had been born three hours when the messenger left, the mare's delivery having been a normal one, and accomplished without assistance.

The message I received was that the foal was choked. It had experienced a difficulty in breathing from the time of its birth, and the notion, which is a prevalent one, was that the choking was due to its having taken some of the *liquor amnii* into its air passages during its first inspirations.

The colt was dead on my arrival, and I asked for the body for dissection. In my endeavour to obtain a correct view of the cavity of the fauces, the openings and course of the Eustachian *canals*, etc. (it is an error to call these passages in the horse "tubes"), I found in this case that the mucous membrane of the fauces was reflected over the openings of the posterior nares (completely and effectually occluding these orifices), and then down the posterior border of the *velum palati*.

The posterior nares were thus *completely and entirely* closed, so that no air could possibly have passed through the nasal chambers to the lungs; and yet the lungs had been inflated, and the colt had lived and breathed for *four hours*; indeed, I was informed that he had made several attempts to rise to his feet, and the attendants had endeavoured to give him milk from a bottle, but

the attempt to swallow had induced a paroxysm of apparent choking. (Is it possible to account in any rational manner for the custom of those attending stock of any kind—of course I am alluding to the illiterate attendants—to pour fluids down the throat of a choking animal?)

In a country practice we often hear of foals and calves being "choked by the fluids" at birth. It is just possible that the abnormality I am here describing may be of more frequent occurrence than we imagine. If it should ever be suspected, I found that by passing a blunt whalebone probe up the nostril the membrane could be broken with a little force (or possibly the new laryngotomy operation might be of use), and this knowledge might aid a practitioner in saving the life of a valuable colt.

A CASE OF TUBERCULOSIS IN A DOG.

BY AUSTIN PETERS, M.R.C.V.S., BOSTON, U.S.A.

THE following case of Tuberculosis in a dog illustrates the transmissibility of this disease from mankind to the lower animals:—

The animal in question was a young white poodle dog. I was first called to see him on December 29th last, and was told that he had been sick several days, and the owner's family thought he had taken cold. When I first saw him his nose was cool and moist, the respiration rapid and jerky, somewhat abdominal. The history then was that at times his nose was hot and dry, and that his appetite was capricious, sometimes good, and at other times poor.

I thought it was a bad case of bronchitis, and prescribed a simple cough syrup, telling the people of the house to let me know if he was not better in a few days. I saw him again in much the same condition December 31st, and again January 2nd.

On January 2nd I learned more of the history of the case, which aided me in reaching a hasty, but as was afterwards proved, a correct diagnosis.

Mrs. H., the wife of the owner of the house where the dog was kept, died of Consumption, November 8th last, after a long and lingering illness of over a year. The dog, then a puppy, had been given to the children of the family the previous July, and I was told that he had acquired the disgusting habit of eating the sputa coughed up by Mrs. H., from the spittoon, whenever he had an opportunity, although he was continually driven away when he was noticed to be indulging his abnormal appetite.

"Is it not possible," I was asked, "that he may have taken Consumption from Mrs. H.?" I thought it not only possible, but

probable, and as he was the pet of young children, advised his speedy destruction. He was therefore shot that evening (January 2nd), and I held an autopsy upon him the following morning.

The *post-mortem* examination revealed Phthisis of both lungs, with a large abscess in the posterior lobe of the left. There was also a little sero-purulent fluid in the thoracic cavity, and a somewhat fatty liver, which I thought might contain miliary tubercles.

Scrapings were made from the wall of the abscess, and smeared on cover-glasses, and then stained for the bacilli of Tuberculosis, which I found in large numbers under the microscope. In places there were clumps of bacilli, ten or twelve in number.

Cover-glass preparations were also made from the liver, but revealed no bacilli or signs of tubercle; they contained, however, a large number of fat cells.

Owing to lack of time, no sections were cut for examination from either lungs or liver.

Excepting the liver, the abdominal viscera appeared healthy. I regret to say that I did not open the stomach or intestines, but they showed no outward signs of disease. This appears to be a case of inhalation Tuberculosis, rather than one of ingestion; but the bacilli, no doubt, gained access to the respiratory apparatus as a result of the dog's filthy habits.

We often hear stories of dogs and cats kept as pets by Consumptives, pining away and dying, but we do not often have a case recorded, backed up by absolute proofs, where a *post-mortem* is held on the animal, and the bacilli found as final evidence of the disease.

THE TREATMENT OF TETANUS BY ANTIPYRIN.

BY A. B. COTTELL, M.D., SURGEON-MAJOR, ARMY MEDICAL STAFF,
CHATHAM.

I AM induced to report the following case, not so much for its own merits, as it stands alone, and the improvement may have been a coincidence, but in order that others whose work lies with horses, etc., may give the drug I employed a fair trial, which, of course, I am unable to do. I may add that I have purposely delayed giving any account of the matter until sufficient time had elapsed to warrant a belief in a cure.

Tedworth, a brown hunter about nine years old, of a quiet but nervous temperament, with a good previous history, was staked in the off-hind frog on March 4th, 1889.

Lameness appeared a week later, and an abscess formed and was treated. This quite healed. On the 21st he first showed signs of Tetanus, and was treated for that disease by a veterinary surgeon,

who placed him in a darkened coach-house, where I have since kept him until May 4th. The stiffness increased, and when I first saw him, on March 25th, the disease was well marked.

March 25th, 12.45 p.m.—Weak legs, and body as hard as a board, tail cocked, no grinding motion in jaws, abdomen blown out, nose dry, eye staring. Prescribed 20 grs. of antipyrin at 1.15 and 3 p.m.

Second Visit, 40.30 p.m.—Less apparent stiffness. 20 grs. at 6 and 9 p.m., midnight, and 6 a.m. Yolks of three eggs to be given in his mash three times a day. Carrots, oatmeal, boiled oats. Half-a-pint of stout was given with difficulty and with so much apparent distress that it was not repeated.

26th, 9 a.m.—Tetanus less marked, tail held naturally, abdomen less inflated, nose cool, cast natural, makes very little water. 10 grs. at 9.30, 12, and 4 p.m.

5.30 p.m.—Improvement maintained, muscles less tense. 10 grs. at 8, 12, and 6 a.m. Food as before. Boiled pearl barley. Cast good, stales easily.

27th, 10 a.m.—Moves more easily, muscles softer. 10 grs. at 12, 6, and 12 a.m. Taking his food well, coat softer.

28th, 10.30 a.m.—Some grinding motion of jaws, the neck can be bent. 10 grs. at 8, 3, and 9 p.m. Some œdema of sheath, off hind puffy each side of hock, legs bandaged. Two small feeds of hay, took water for the first time since the 26th (the mashes have been sufficient before). Cast moist and plentiful.

29th.—10 grs. at 6 a.m., 12 and 6 p.m. Improving.

30th.—5 grs. at 10 a.m. and 10 p.m. Three feeds of hay, dry rub down.

31st.—5 grs. at 9 a.m. and 9 p.m. Had him coaxed out of the coach-house into the sun for ten minutes. Very weak and stiff from confinement.

April 1st and 2nd.—5 grs. at 10 a.m. Condition unchanged. Food as before.

3rd.—As the hock remained enlarged, and the fetlock and shank were also very œdematous, some of the old frog was removed; no local mischief could be detected. The leg to be fomented three times during the day, dry flannels between the fomentations. The sheath, which is very œdematous and pendulous, to be supported in a sling.

4th.—Taken in the sun for fifteen minutes; good dry grooming; hay increased. He lay down last night for first time. Sheath smaller; can stale easily.

From this date until the present time he has steadily improved. He had 2 qts. of milk and a dozen eggs from April 3rd until the 25th, when the milk was stopped and eggs cut down to six, and he

now gets the usual food. He is taken out for half an hour's walking exercise twice a day, weather permitting, and was shod on April 30th. He walks easily, and, as far as I can see, there is no appearance of Tetanus.

I was led to employ the drug as it is known to allay exaggeration of nervous activity, while one of its advantages is its solubility, which makes its administration easy.

[Much reliance cannot be placed upon antipyrin as a remedy for Tetanus, until it has proved successful in a number of cases. A great many drugs have been lauded from time to time as beneficial in the treatment of this disease, but after prolonged trial nearly all have been discarded. Recoveries not unfrequently take place without the administration of any medicine, and it is generally found that the less the patient is dosed and troubled the better.—
ED. V.J.]

TROPICAL PITYRIASIS.

BY R. W. BURKE, M.R.C.V.S., A.V.D., LONDON.

I HAVE had the opportunity of seeing some hundreds of cases of this disease in seven years' practice in India, besides others I witnessed in the Stud Department when permitted to see practice under Messrs. Oliphant and Batt many years ago. I have made some histological observations of the pathological changes set up in the skin by this disease, and have carried out inoculation experiments on animals. I have seen many methods of treatment adopted by different veterinary surgeons, and recommended some myself. I have witnessed a fungus described in my work on "The Tropical Diseases of the Horse," published last year, and mentioned in most text-books by German authors, which Mr. Haslam believes is closely allied to the *Tricophyton furfuracea*, if it is not that parasite itself (THE VETERINARY JOURNAL, March, 1889). I have found, however, the fungus said to be peculiar to this disease, in substances outside of this particular malady and in other forms of skin disease. I have also found that the disease is not communicable by inoculation.

From these facts, and from the results of my experiments, I came to the conclusion that the fungi are only concomitant, and are neither diagnostic nor the cause of the disease.

Referring to this question, I may be permitted to quote from a former article on the subject by me, which runs thus: "The disease examined microscopically shows in the field of observation epithelial cells, fibrils, granular particles of pigment, besides fungi, tissue shreds and inflammatory products developed in the process of secondary inflammation. The German veterinary sur-

geons* have long recognised, and Mr. Henry Tryon,† naturalist and microscopist, Brisbane, has lately noted the presence in this disease of an exceedingly minute fungus, which occurs in immense numbers in the cells of the cuticle hair follicles. It is not known positively whether this disease is actually caused by the fungus, or by tissue change (see article on 'Vegetable Parasitic Skin Diseases' in *The Veterinarian* for February, 1888), since various species of micro-organisms have been now isolated from the epidermis of the normal skin, but it is not settled whether in their distribution and in their action they bear any definite relation to the morbid process. We may conclude that to those several species of parasites already known to exist in the epidermis, another species has been added" ("The Tropical Diseases of the Horse," by R. W. Burke, 1888).

Regarding the possible "source of the disease to the human subject not suspected before," which has been alluded to by Mr. Haslam, I may state that, during the whole of my experience in India, when this disease has been seen to be most prevalent among the horses, not one case was witnessed among the syces and the soldiers who had the grooming of the latter. It has been stated in favour of its fungous origin, that in a particular damp station the disease was noticed to be more prevalent one year than it was elsewhere. My experience teaches me that there is no place I know of where the disease is more prevalent in India than Cawnpore and Allahabad, for example, and the dry heat of these parts is well known to old residents. Mr. Haslam has no confidence in local blistering over the kidneys and diuretics, although he has "no experience" of either, in the treatment of this disease. I can only inform him that I have had recoveries from this mode of treatment when all local applications to the skin failed to produce any effect, and in many cases when the latter were discarded to note the effects of the diuretics employed.

It is clear that climate has a more or less direct influence upon the prevalence of this disease, which appears only during the hot weather, and rarely in the winter, and is practically unknown or infrequent in colder climates, as in England—at least, as a prevalent disease in the horse. It is not surprising, seeing that the hot weather is a predisposing cause of skin disease in India, to find that a much larger proportion, if not all of the horses, are attacked during the summer; and it may be here noted that the special liability of horses to be affected by skin diseases in India is not found to obtain in other parts of the world, and must be due to local causes. I have carefully examined the register of sick

* *Lehrbuch der Pathol. u. Therapie der Hausthiere*, Roll.

† *The Veterinarian*, June, 1888.

animals at several stations in India, and found hot stations were those in which the largest number of admissions were noted from this disease.

Natural dampness of the air, as during the rains in India, which causes maceration of the epidermis and affects normal secretion of the skin, may be looked upon as another cause of this disease.

Local irritation connected with improper grooming, collection of dirt, of lice and ticks, etc.

Constitutional tendency.—The liability to the disease in previous years promotes the tendency to it, and in such animals the disease may be said to be constitutional. In many cases the animals suffer from a state of disease which is truly chronic, as shown by the veterinary history sheets.

Defective action of the correlated organs, leading to hyperæmia of the skin: hence over-feeding, excess of water taken during the hot weather, etc., throw extra work on the skin and lead to disease.

High feeding.—The question of high feeding as a cause of disease is not only interesting, but important. I will only remark on it that the greater the amount of nitrogenous food given to animals, and the greater the work thrown upon the eliminatory organs, the greater the liability to disease. If the function of the kidneys, etc., has to be taken up by the skin during the hot weather in India, high feeding only increases liability to disease, and precautions should be taken for its prevention.

LITERATURE.

- Spinola, *Speciellen Pathologie*, 1863.
 Burke, Annual Veterinary Report, 1883.
 Haselbach, *Zeitschr. f. Microscopie u. Fleischbeschan*, 1884.
 Burke, VETERINARY JOURNAL, July, 1884; art., "Pityriasis."
 Adams, *Quarterly Journal of Veterinary Science in India*, July, 1884; art., "Skin Disease of Horses in India—Eczema."
 Röhl, *Lehrbuch der Pathologie u. Therapie der Hausthiere*, 1885; art., "Pityriasis."
 Burke, *The Veterinarian*, June, 1885; art., "Pityriasis."
 Friedberger u. Frohner, *Lehrbuch der Spec. Pathol. u. Therapie*, 1886; art., "Pityriasis."
 Stanley, *The Veterinarian*, June, 1888; art., "Prurigo."
 Adams, VETERINARY JOURNAL, July, 1888; art., "Pityriasis."
 Burke, VETERINARY JOURNAL, August, 1888; art., "Pityriasis."
 Burke, "The Tropical Diseases of the Horse," second edition, October, 1888; art., "Pityriasis."

Editorial.

CRUEL OPERATIONS ON ANIMALS.

THE judgment delivered by Lord Chief Justice Coleridge and Mr. Chief Justice Hawkins, on the legality of dishorning cattle, is important from several points of view, but especially with regard to the *jus animalia* and the interests and fancies of mankind. The practice of dishorning cattle is prevalent only to a limited extent, chiefly in Ireland, and attempts have been made on several occasions to suppress it, on account of its cruelty, these attempts being only rarely successful. The present case which called forth the judgment of the high legal functionaries alluded to, came before them by way of appeal from a decision of the Norfolk magistrates at the Blofield Petty Sessions, as already announced in this journal for last May. According to the *Times* remarks on the case, Mr. Wiley, a Norfolk farmer, had been summoned, at the instance of the Society for the Prevention of Cruelty to Animals, for having unlawfully and cruelly tortured thirty-two bullocks by dishorning them. The facts were in no dispute. Mr. Wiley admitted that he had done what was alleged, and gave every facility to the officers of the Society for ascertaining how it had been done, and in what state the animals operated upon had been left. That the operation, as performed on Mr. Wiley's farm, had been attended with intense and prolonged suffering to the animals was clearly proved, and does not seem to have been denied. The defence set up was that it was necessary for a variety of reasons. It added to the value of the animals; it enabled them to be packed more closely than they could have been if they had retained their horns, and it prevented them from inflicting injury on one another, whether closely packed or not. The magistrates in the event dismissed the case, but without costs, since they considered that the Society had done great good by instituting it, and at the request of the Society they stated a case for the opinion of the Queen's Bench Judges, giving the reasons of their decision, and asking whether the dismissal was to stand.

The question has been met with a decided negative by the judges to whom it has been referred. The operation of dishorning, as it is ordinarily practised, and as it was practised on Mr. Wiley's farm, has been pronounced cruel and indefensible. "Detestably brutal" was Lord Coleridge's language in describing it. Mr. Justice Hawkins termed it a "revolting operation," so torturing that he shuddered to think that men could be found to perform it. As to its absolute illegality, both judges are in agreement. That it adds somewhat to the selling value of the animals they held to be no adequate defence for it, the rather since the results aimed at can be attained equally well without it. The cruelty of the operation, amounting to downright torture,

was proved by most convincing veterinary evidence, and was substantially admitted by the defence. Its details were characterised as "utterly disgusting," etc., and showed that the operation was detestably brutal, the beasts being placed between two waggons one at a time, a plank being secured to two stout oaken posts, to which the animal's head was fixed as in a vice, and two men held the head, while a third sawed off the horns with a common saw. After the operation the bullocks bled for five or six minutes, and at a later stage there was a discharge of pus, which continued for some time. The animals, it was said, made such a noise that they might be heard a mile off. Every tooth of the saw caused excruciating pain, and the inflammation following the operation produced great and prolonged suffering. It was demonstrated that the main benefits of it could be obtained by a more simple and painless process, except indeed as far as it enabled the seller to put a fraud on an incautious purchaser as to the animal's breed or age. As to its alleged necessity, the court was clear that a practice which had for many years been unknown or wholly discontinued in England and Wales and in most counties of Scotland, and had only recently been introduced from Ireland, could not be thought necessary. In any case, there must be some proportion between the object aimed at and the means. In the case before the Court no such proportion could be found. The animals had been "hideously tortured" in order to put a few pounds more into the owner's pockets; and this, Lord Coleridge said, is an instance of such utter disproportion between the thing done and the result as to stamp it as barbarous and unlawful. The end sought, Mr. Justice Hawkins added, may not be attained at the sacrifice at which it must be had. For a man to buy horned cattle, and to enhance their value by mutilating them at the expense of excruciating torture to the animals, must be set down as needless cruelty. Some former cases, which have been decided in an opposite sense, were put forward by the defence, but were set aside by the Court with full expression of the respect due to the authorities before whom they had been heard. Partly, there was no proof that the evidence of gross cruelty had been as overwhelmingly strong as in the Norfolk case. Cruelty, in the legal sense, must be a question of proportion and of degree. Pain may legitimately be inflicted for a necessary or sufficient end. In the case before the Court both these conditions were wanting. The pain inflicted had been unnecessary, and it had served no end which amounted to a justification, or came near it. Partly, too, some earlier decisions were overruled. It was not enough, Mr. Justice Hawkins said, that there should be an honest belief that the torture was not illegal, or that it was for the animal's good. If such a principle were admitted, there could be no limit to its application, and ignorance and cupidity would have free play to inflict any amount of suffering for any cause or for none. The judgment of the Court therefore was, that the practice of dishorning cattle is illegal, and ought to be suppressed, and that in the case before them the magistrates ought to have convicted.

This judgment has an important bearing not only upon the practice

of dishorning cattle, but upon other operations to which animals are subjected on a similar plea, and chiefly by amateurs. Hints were thrown out that possibly these practices, which, if more necessary were not the less torturing, might in some instances be held equally open to remark. Mr. Chief Justice Hawkins, in expressing his opinion on the case in question, alluded to some of these, and among them "docking" of horses, which, he said, was a painful operation that might be occasionally justified; but, he added, "I hold a very strong opinion against allowing fashion or the whims of individuals to afford a justification for such painful mutilation. These instances," he said, "indicated his view that the legality of a painful operation must be governed by the necessity for it, and even where a desirable and legitimate object was sought to be attained, the nature of the operation and the pain caused thereby must not so far outbalance the importance of the end as to make it clear to any reasonable mind that it is better that the object should be abandoned rather than the suffering should be inflicted."

The veterinary profession will hail with satisfaction the decision and the opinions of the learned judges on this dishorning fashion and on the rights of animals. Its members are, by virtue of their calling, bound to protect the lower creatures from pain and torture, and, as in this case, they have never been slow to acknowledge and assume this duty.

INFECTIOUS ABORTION IN A FLOCK OF SHEEP.

LABAT, clinical professor at the Toulouse Veterinary School, has recorded an outbreak of infectious abortion among a flock of ewes which he recently witnessed, and which possesses some features of much importance with regard to this occurrence in other than the ovine species. He remarks, in introducing his account of the occurrence, that infectious abortion, known also as enzoötic and epizoötic abortion, which is very common among bovines, is not very rare among mares, if we may accept the evidence of Delorme, Fischer, Huveillier, Trélut, etc., but few authors refer to this accident among sheep. Delorme has seen it occur *somewhat frequently* amongst the flocks on the plains of Arles and Camargue, and H. Bouley included ewes among the female animals which suffer from enzoötic abortion. Cows occupy the first place, then mares, and lastly ewes. The literature of the subject being very meagre, Labat considered his report would offer some interest.

The outbreak occurred among a flock of twenty-four ewes, aged four, five, and six years, in a little commune in Aude, at the foot of the Montagne-Noire. It was kept in a confined, low, badly ventilated and lighted sheepfold, which was seldom cleaned out. At all times the sanitary condition was generally bad in the country, the mortality averaging four or five per cent. in the flocks every year. The ewes in question had consorted with one ram, four years old, for a month, and they would have lambed at the end of February or beginning of March. On December 29th, 1888, one ewe, four years old, aborted without any assignable cause; previous to that date it looked lively and well. A few hours after aborting it fed as if nothing abnormal had happened, and it remained in good health. The same thing

happened with fourteen other ewes, which aborted between December 28th and January 15th. All these animals had been already bred from, and had never before miscarried; they were at the end of the third or commencement of the fourth month's period of gestation.

On January 19th, Labat was consulted with regard to the state of the flock, and he prescribed the following precautions:—

1. Evacuate the sheepfold.
2. Separate the pregnant ewes from those which had aborted.
2. Place the pregnant ewes in a clean, well-ventilated place.
4. Every week remove the dung, clean the floor, the walls, and racks with boiling potash-water.
5. Every ewe which aborts to be immediately removed from the healthy to the second group (those which have aborted); complete delivery if it is incomplete. Replace the soiled litter. The fœtus and membranes to be steeped in lime and buried in an out-of-the-way place.
6. Every morning sponge the vulva, anus, perinæum, and tail of the ewes with a solution of corrosive sublimate, according to the following formula:—

Corrosive sublimate	..	..	..	..	1 gramme.
Alcohol	..	..	..	..	100 grammes.
Boiling water	..	..	..	..	2 litres.

7. Feed on good food and avoid chills.

Vaginal injections were not recommended, for fear of proving a cause of abortion if badly given.

This treatment was continued from the 21st January, and between that date and the 25th of the same month there occurred four abortions. These were the last. On February 8th the treatment was suspended, so far as the antiseptic spongings were concerned, and at the expected period—end of February and first days of March—lambing commenced, and finished in a normal manner. In the meantime the old sheepfold had been cleansed and disinfected, and is now occupied by the flock.

The expense of the measures was trifling, and carrying them out was not very exacting, two persons only having been employed for an hour every morning during the eighteen days they were enforced.

THE DISHORNING OF CATTLE.

IN a note in the Journal for May (page 391) allusion was made to a trial which had taken place in Norfolk with regard to dishorning cattle, and to an appeal against the decision of the magistrates who had dismissed the case, and which was argued in the Queen's Bench Division. On May 18th the Lord Chief Justice and Mr. Justice Hawkins, before whom the case had been argued, gave their written judgment.

The Lord Chief Justice said the details of the evidence given in the case were utterly disgusting, and showed that the operation of dishorning was detestably brutal. It was not beneficial to the animal, although it enabled one or two pounds more to be realised upon a sale, the coarseness of the cattle, which was shown by the horns, being concealed. It was stated that it was a most cruel practice, causing fearful pain, and absolutely unnecessary, and this not by sentimentalists, but by men of the world dealing with scientific matters in a scientific manner. He was of opinion that the operation was not a necessary one, and that therefore the case should be remitted back to the magistrates to deal with.

Mr. Justice Hawkins concurred in thinking the magistrates wrong. Judgment was given accordingly.

CONTAGIOUS PLEURO-PNEUMONIA EXPERIMENTS IN QUEENSLAND.

At the invitation of the Board appointed by the Queensland Parliament to investigate matters connected with inoculation for Pleuro-pneumonia in the herds of that country, a large number of persons interested in pastoral pursuits in Queensland assembled at the Quarantine Station, Indooroopilly, on March 8th, to witness a public demonstration of the experiments conducted by Dr. Germont and M. Loir, the French scientists. There were present: The Hons. A. J. Thynne, W. Smyth, and J. F. M'Dougall, MM.L.C.; the Hon. A. Norton, Speaker of the Legislative Assembly; Messrs. Crombie, North, Lyons, Paul, Cowley, Foxton, and Palmer, MM.L.A.; Messrs. A. C. Grant, P. R. Gordon, Sir Somers Vine, C. B. Dutton, J. M'Andrew, B. Purcell, J. S. Higginson, J. D. Wienholt, Byrnes, W. B. Slade, William Castles, R. Newton, A. M'Dowall, J. Irvine (vet. surgeon), T. Noyes, C. Williams, E. B. Jeune, J. A. Donaldson, de Burgh Persse, H. Bracker, and Dr. Gibson, besides a number of other gentlemen interested in pastoral pursuits.

The primary object of the experiments was to demonstrate the practicability of taking the virus of Pleuro from the animal and transmitting it to those at a distance who have herds which require inoculation. The general arrangements for the experiments were superintended by Dr. Germont. A calf which had been inoculated behind the shoulder was killed. The inoculation took place on the 12th February, and the body of the unfortunate animal was greatly swollen by infiltration beneath the hide. The swellings were first hammered with an ordinary carpenter's hammer, to break up the cells, and then the virus was extracted. The hair was first carefully clipped off, and the part singed to destroy any outside germs that might exist; then tubes were inserted through the skin into the swellings, and the virus drawn off by suction. The tubes were constructed with a sharp needle point and a bulb, and before insertion were sterilised by heat to prevent the possibility of any other germs remaining in them. The virus is drawn up by suction, the air being exhausted by means of the breath, if the pressure of the virus is not sufficient to drive the liquid up. When the bulbs are filled the tubes are hermetically sealed at one end by means of a spirit lamp, and are ready for transport. A second calf killed, which had also been inoculated on 12th February, was covered with immense swellings on the stomach and sides, and several quarts of virus were obtained from it.

During the course of the proceedings, Dr. Germont explained to those present the effect of the virus and the manner in which to apply it to render inoculation protective. He stated that both these animals killed were inoculated behind the shoulder, which had produced the disease in a severe form, and the virus used was of the third or fourth generation, having been passed through several animals, but it had lost none of its efficacy. Several calves in the yard, he said, had been inoculated with the virus in the tail, and had since been inoculated behind the shoulder, but in no case had any severe sickness resulted. From what could be seen of the cattle upon which experiments had been conducted, it would seem that the scientists had pretty well succeeded in proving that inoculation was a preventive against Pleuro, as the calves which had been inoculated in the tail, and had had the symptomatic fever, were proof against the inoculation of a large quantity of virus behind the shoulder, and after several weeks were in good condition, showing no signs of swelling. The scientists have not succeeded in hitting upon the particular microbe which is really the cause of this disease, but they have found a microbe, and they are now conducting further experiments with a view to proving the practicability of cultivating the virus apart altogether from the living animal, in a medium of broth, in which it is expected to grow and keep

for any length of time. The virus, as procured from the animal, will only keep from fifteen to twenty days. Amongst the first experiments tried by the scientists was the test as to whether or not the virus they had procured was that of true bovine Pleuro-pneumonia. With that end in view, it was tried upon goats, guinea-pigs, and fowls, and proved perfectly innocuous, while upon cattle it produced deadly effects. This was regarded as a certain proof that the lymph of the true Pleuro had been obtained. The virus used was not obtained from the chest or lung, which is the natural seat of the disease, but it appeared to develop, after the inoculation, beneath the skin of the abdomen, and from this part of the animal the virus was obtained which was used for cultivation. According to the stated results of the experiments, the virus appeared to improve after being passed through several animals, becoming purer, and showed more decided effects than when it was first obtained from an animal naturally affected at Tabragalba. As far as the immediate purpose of the experiments was concerned, that of demonstrating the possibility of cultivating the virus in the living animal, they were pronounced by all a decided success.

About noon the Chairman of the Pleuro Board, Mr. E. Palmer, M.L.A., made a short speech, in which he said that the colony of Queensland might be congratulated on having obtained the services of these gentlemen from Europe, and that the Government of Queensland might be congratulated on having given them the opportunity of carrying on the experiments they had been conducting. He would say nothing about the treatment they had received in New South Wales—they had all their own opinion about that; but he believed that when they published their report, every one would be satisfied with the results they had attained. The wealth of the colony consisted in its herds, and nothing would tend to make that wealth more secure than any means which would tend to reduce the mortality from Pleuro. He referred to the deep interest taken by Dr. Germont and M. Loir in the scientific work they had taken in hand, as shown, among other ways, in their turning out in the middle of the night to investigate the condition of the beasts they had been experimenting upon. He expressed the hope that one at least of the scientists would remain to conduct experiments in other matters. Their great master, Pasteur, had been the means of saving millions to the people of the world by the experiments he had conducted, and he felt convinced that the experiments which had been carried out by Dr. Germont and M. Loir would tend to our material welfare by eliminating a disease to which the herds in this district were only too subject. In closing, he hoped that they would be prosperous in their future experiments, and again expressed the hope that one of them might be induced to remain in Queensland.

Dr. Germont, in responding, said that he and his colleague had been very glad to come amongst such kind people, and assured his hearers that his visit to the colony had been a very pleasant one. He was very much pleased to find that the Government were prepared to go to a large expenditure of money to make experiments, and had not stinted them in any way in regard to providing subjects. Many scientists were obliged to stop their experiments for want of the necessary subjects upon which to conduct them; but here they had had a full supply. It would give him very much pleasure to explain to them what had been done. They had been asked to try and make a cultivation of the microbe of Pleuro-pneumonia, so that it would be always ready for inoculation, and so would be fit to travel a long way. Those present knew, of course, that cattle that were travelling were liable to take the disease, and that heavy losses were occasioned thereby. Unfortunately, though the owners knew the value of preventive inoculation, they were unable to get the virus when they wanted it. They had been

asked to make a cultivation of the microbe. That could be done in various ways. They could grow the microbe of the lymph of Pleuro in broth; but for the present they had not succeeded in that way. However, they would be able in a fortnight or so to say whether the microbe on which they were now experimenting was the right one or not. Instead of cultivating in the tube, however, they had principally devoted their attention towards cultivating the virus in the living animal. There was another disease which could not be cultivated in tubes, and that was Cowpox, which was an efficacious preventive against Small-pox. The lymph was, however, cultivated in children, and, as was well known, successive inoculations are made from one child to another. That was something like what they had tried to do in regard to Pleuro-pneumonia. They had succeeded in showing that if they inoculated a calf from a spontaneous case, it would be possible to produce a disease which may be reproduced whenever it might be desirable, simply by inoculation. Starting from the beginning by inoculation under the skin in a vital part, with lymph taken in a spontaneous case, they had produced sufficient Pleuro lymph from a single calf to inoculate some thousands of cattle. It was next important to know how long the lymph could be kept, and they were obliged to try many experiments in that direction. They had inoculated with virus that had been kept seventeen days, and it was virulent enough to kill calves with large swellings. The question now would be asked whether the lymph thus produced by inoculation under the skin is as efficacious for protection against Pleuro as lymph taken from the lung in a spontaneous case of the disease. In order to ascertain this they had inoculated eight calves with this artificially produced lymph—five in the tail and three under the skin in another part of the body. The same day two calves were inoculated in the tail from a spontaneous case of Pleuro, and the whole lot of thus protected calves had since been inoculated again in a vital part with virus from another spontaneous case. Another lot of calves not protected were inoculated in the same manner and with the same virus. The result was that of the unprotected calves three had already died and five were more or less affected, one showing no sign. With regard to the ten calves protected by inoculation, two had slight swellings and the rest were unaffected. In short, of the unprotected animals four out of nine had died, and of a similar number protected, none had really suffered, which was proof that the artificially produced virus was a protection as efficacious as the virus taken in a spontaneous case. Now, how could this knowledge be made available in practice? He would propose that a suitable place should be provided, and a man employed to make successive inoculations of calves in order that a supply of virus might always be ready. A stockowner who wished to protect his cattle would apply to this station, from which a small quantity would be sent to him. With this he would inoculate one or two calves on his station in a vital part, and from the lymph produced from these animals might inoculate many thousands.

Dr. Germont, upon the conclusion of his speech, was loudly cheered by all.

M. Loir also expressed his thanks for the kind manner in which he and Dr. Germont had been treated during their stay in Brisbane.

At the conclusion of the speeches, Dr. Germont gave several experiments to show how inoculation could be effected with the virus contained in the glass tubes. Dr. Germont estimates that enough lymph can be obtained from a single calf, inoculated behind the shoulder, to treat several thousand head of cattle and render them proof against the disease. Every one was greatly interested in the experiments, and Mr. P. R. Gordon was generally thanked for the action he had taken in bringing about these important experiments, and for the invitations he had issued.

The *Brisbane Telegraph*, commenting on these efforts of the French envoys,

says, "The experiments of Dr. Germont and M. Loir, undertaken at the request of the Government with a view to discovering a means of cultivating and preserving the virus for inoculation as a preventive of Pleuro-pneumonia, some of the results of which were publicly witnessed by a number of representative stock-owners and medical gentlemen at Indooroopilly on the 8th instant, must prove of paramount importance to Australia. It is computed that, including the fearful mortality among travelling cattle, fully 10 per cent. of the cattle in Queensland annually succumb to Pleuro-pneumonia during each outbreak in the colony. Assuming the loss, however, to be only half that estimate, we have still a death-rate in our cattle from the disease of a quarter of a million annually, of a value at the lowest computation of £600,000.

"Inoculation has for over a quarter of a century been regarded as a prophylactic of the disease, and no stronger evidence of this can be adduced than the fact that Queensland store cattle, bearing the inoculation ear-mark, realise from 15 to 20 per cent. more in the southern markets than uninoculated cattle. The difficulty hitherto with stock-owners has been to procure a supply of lymph for inoculation until the disease had actually extended to their herds, or until it had approached so near that the probability was the herds had actually become infected. The losses by Pleuro among uninoculated cattle travelling to market have been exceptionally severe. In every instance the owners would gladly have inoculated them before starting on the roads; but here, again, the virus was not available within perhaps some hundreds of miles. Independent of the loss to the owners, the disease has been spread broadcast by travelling stock among the cattle all along their route. By a series of carefully conducted experiments Dr. Germont and M. Loir have conclusively proved that by a very simple process a continuous supply of effective lymph can be kept up by cultivation through living calves, something on the principle on which calf-lymph is cultivated for vaccination for small-pox. All that is required is a central station at which a constant cultivation can be kept up. From this station a very small supply can be forwarded by post, in sterilised tubes, to the uttermost part of the colony. A few drops of this lymph inserted under the skin on one side of a calf will, in the course of three weeks, provide a supply of pure lymph sufficient to inoculate from two to three thousand head of cattle. In the course of these experiments and by close observation the scientists have proved that the lymph produced by inoculation is purer and equally as virulent as that taken from an animal that has contracted the disease in the natural course, and that it loses none of its virulence by being passed through several calves in succession, the fourth cultivation, so to speak, being equally as effective as that from the first calf inoculated from the naturally contracted disease.

"To set at rest all doubts as to whether the disease set up artificially by inoculation is that of true bovine Pleuro-pneumonia, the scientists injected a similar quantity of the same lymph which produced death in calves into the blood of goats, guinea-pigs, and fowls without producing any results, and to test the value of inoculation in the tail as a prophylactic, ten cattle were so inoculated with cultivated virus, and two with virus taken from a bullock suffering from the disease contracted in the usual way. These cattle were closely watched, their temperatures being daily registered. When they had fully recovered from the effects of this inoculation they were reinoculated under the skin, behind the shoulder, and at the same time a number of unprotected calves were inoculated in the same place and with an equal quantity of the same virus. The results were that two of the protected ones showed a very slight enlargement where the skin had been punctured; beyond this the inoculation had no effect; whereas a majority of the unprotected ones had died before the 8th, and we are informed that

several have since died from the effects of the inoculation. No stronger proof could be produced of the complete success of the experiments. During the progress of the above experiments the scientists have been giving close attention to the discovery of the particular microbe which causes this disease. They have discovered a microbe, but, as Dr. Germont explained, it will take several other experiments and very close observation to determine whether or not it is the microbe of Pleuro-pneumonia. Should they succeed in discovering the microbe of Pleuro, lymph for inoculation that will keep active for all time can then be cultivated 'by the ton,' as the doctor expresses it, in broth or other media, in the laboratory, quite apart from the living animal. Our stock-owners may rest assured that the work so successfully begun by Dr. Germont and M. Loir will not end with the Indooroopilly experiments, but that it will be taken up by the great French scientist Pasteur himself; and if so, judging from his past investigations in bacteriology, failure with him will be an almost impossibility."

VISIT OF THE DUKE OF CAMBRIDGE TO THE ROYAL HORSE INFIRMARY, WOOLWICH.

ON April 29th, his Royal Highness the Commander-in-Chief, accompanied by Lord Wolseley, Major-General Sir Redvers Buller, the Principal Veterinary Surgeon, and other members of the head-quarters and garrison staff, visited the Royal Horse Infirmary, for the purpose of inspecting the horses more recently operated upon for Roaring. Those fit for testing, twenty-one in number, and which had been operated on since February of this year, were subjected to a very severe ordeal in the form of long and rapid galloping. His Royal Highness was so well pleased with the result that he desired the Principal Veterinary Surgeon to explain to him the pathology of the condition and the mode of performing the operation. All this was demonstrated on a larynx. He afterwards wished to see a horse put under chloroform, which was done by Veterinary Surgeon F. Raymond, the time occupied being a few seconds over a minute, and the quantity of chloroform being only an ounce. Subsequently H.R.H. was pleased to express his gratification with what he had witnessed, and to say that he was strongly inclined to agree with the Principal Veterinary Surgeon as to the value of the operation for Roaring, and to hope that a considerable number of the horses operated on would be cured permanently.

THE FELLOWSHIP DEGREE OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

ON April 24th, the following members of the profession successfully passed the prescribed examination for the Fellowship Degree: J. E. Peele, Durham; J. G. Parr, Leicester; G. T. Pickering, York; R. C. Irving, Birmingham; D. M. Storrar, Abergavenny.

The following were the questions in the written examination:—

Comparative Anatomy and Physiology.

1. Describe the nature of the Respiratory Process in Animals, and state how the organs by which it is conducted are arranged in Mammals, Birds, Reptiles, and Fishes.
2. What is the period of Gestation in the Mare, Cow, Ewe; Sow, and Bitch? Describe the Structure and Form of the Placenta in each.

3. What is Urea? State what you know about its formation in the body, and how its amount may be increased or decreased by food and exercise.

4. What is meant by Arterial Pressure? State what you know of the influence exerted on it by the Nervous System.

5. Describe the structure of a Capillary Blood-vessel, and state the conditions which modify the Capillary Circulation in any part or organ.

6. What is meant by Reflex Action? Give an example, and mention the course by which the Afferent and Efferent impulses are conveyed.

(Four of these six questions to be answered.)

Therapeutics.

1. What are the Indications and Counter-indications as to the use of Opium in the Treatment of Disease?

2. What are the Physiological Actions of Cocaine? State for what purpose it might be used in Veterinary Practice.

3. Describe the Physiological Actions of Ether and Alcohol, and state under what circumstances they may be used in Veterinary Medicine.

(Two of these three questions to be answered.)

Veterinary Medicine and Surgery.

1. Describe the Suppurative Process from the initial stage, and define the conditions which are essential to its completion.

2. What are the symptoms of Nephritis in the Horse? What Treatment should be adopted?

3. Under what circumstances does Mammitis occur in the Cow and Ewe? What are the Terminations of the Disease, and what Treatment should be pursued in the several stages?

Pathology.

1. Describe the differences between Puerperal, Milk, or Parturient Fever, and Parturient Apoplexy, and give the Pathology of these conditions.

2. Describe the Pathology of Tuberculosis.

Veterinary Police.

1. Under what conditions may Rabies become Epizootic?

2. May Tuberculosis be considered an Epizootic disease? and if so, how is it disseminated?

ON THE LATELY DEMONSTRATED BLOOD-CONTAMINATION AND
INFECTIVE DISEASE OF THE RAT AND OF EQUINES IN
INDIA.

BY H. VANDYKE CARTER, M.D.LOND., BRIGADE SURGEON, BOMBAY.

(Continued from page 346.)

In most of these instances details of experiment are given sufficient to show that adequate precautions against error were duly practised; seemingly the results were never of a doubtful character; and lastly, it would appear that the inoculation experiments were invariably successful, so far as concerns repetition of the blood-organisms. As regards identity of the morbid state induced with that naturally acquired, not less ample proof is afforded in the instance of the horse and mule (see Appendices D, E, F, and G of Dr. Evans's Report); and Mr. Steel, in reply to some questions of mine, explicitly states of his experiments that "the phenomena induced by inoculation were those of 'Surra,'" and "all inoculated animals died of 'Surra' pure and simple, with the exception of one case, in which pyæmic complications"

ensued some days before death. According to these data, which, if not numerous, are still decided and clear, it would follow, first, that both visible blood-contamination and a certain group of symptoms are transmissible by artificial means from the diseased equine to healthy ones of the same species; and secondly, that a similarly contaminated state of the blood may be transmitted from the "Surra" equine to the dog and monkey. That to these non-equine animals, however, the "Surra" disease had always been simultaneously communicated, is not so clear, for the records bearing on this important point seem too few and incomplete to be quite convincing. Thus, while the two dogs inoculated by Dr. Evans both showed on the 11th day a kind of leukhæmia (and one the hæmatozoon scantily), with pallor and emaciation, yet there was no jaundice or petechial rash; and moreover, a sucking pup, which on several occasions displayed abundant blood-organisms, continued in good health for at least 18 days. The dog, too, inoculated by Mr. Gunn did not for days or probably weeks show any signs of illness, whilst the blood contained active monads. Continuous records are, however, wanting, and the end was not known. The two positive data of Mr. Steel include, first, a young dog both inoculated and fed on tainted mule's flesh; organisms seen in blood on 12th day, but no signs of general disorder until the 16th, when and after the animal was dull, feverish, with very pallid conjunctivæ, a slight cough and tenderness in the loins, appetite capricious, many parasites in the blood at times; 28 days later there were noticed fever, emaciation, with glandular swellings on each side of the head and in the left groin, with a state of general tenderness; in the blood many disintegrated corpuscles, but no parasites; the buboes increased, œdema of the lower limbs, with persistent fever and tendency to collapse, death ensuing on the 51st day after inoculation. The autopsy was made too late for useful results. Next, a monkey had a syringe of tainted mule's blood injected beneath the skin of the thigh; 3 days afterwards high fever and organisms in the blood, which lasted 4 days, subsiding on the 5th, but recurring after an interval of 4 days; and subsequently other febrile recurrences (parasites seen after a month), with emaciation and debility, feebleness in the limbs, ulcers and necrosis of the bones of the feet, and final exhaustion upwards of two months after inoculation; at the autopsy no marked positive changes, only some petechiæ on surface of lungs. This animal was brought from Rangoon to Madras during its illness, and may have suffered, as monkeys often do, from confinement and the voyage; its temperature chart for 30 days is given by Mr. Steel, blood-scrutinies being made for 13 days in succession at first, and again later on.

Some other inferences from the records, as they stand, are the following: Incubation period after inoculation, varied as to the subject, being in the horse 4—6 days, in the mule 4—10 days, in the dog 11 or 12 days, in the monkey about 3 days; also varied as to the method of infection, being shortest after intra-venous injection and subcutaneous inoculation, and somewhat delayed after simple ingestion of the tainted blood given in quantity. Sometimes a depression of temperature occurred during this period. A local swelling might or might not follow the hypodermic operation. There was one successful infection of a mule with blood taken from a mule naturally diseased, but not at the time of experiment showing the parasite in its fresh state; organisms appeared in the subject on the 10th day, along with pyrexia high and intermitting, and subsequently death on the 40th day. Mr. Steel thinks it possible that in stained preparations of the inoculating material some evidence of the presence of the hæmatozoon might have been seen. Dr. Evans found that when the tainted horse-blood was freely diluted with water the organisms had disappeared after 24 hours, and this mixture proved innocuous to two healthy horses when administered by mouth; and

Mr. Steel ascertained that thoroughly dried tainted mule's blood was inoperative on inoculation. A fatal result seems always to have ensued in watched animals—amongst equines in 5—7 weeks; a dog lived $7\frac{1}{2}$ weeks, a monkey over two months; the *post-mortem* appearances being occasionally recorded as not essentially peculiar. Second or successive series of inoculations from the first individual were not apparently attempted. Mr. Steel's essays include an unsuccessful administration of gastric and intestinal contents of tainted mule per mouth to a healthy animal; also unsuccessful inoculation-experiments (three) on an Amrut bullock, old and emaciated; and similar unsuccessful inoculations on a young goat (three), the animal becoming, however, much emaciated, in spite of good feeding and voracious appetite, after the last essay.

The last part of my notes refers to the probable nature and analogues of this blood-parasite and to the character and affinities of the equine "Surra" disease.

As regards the hæmatozoon, minute elongated bodies, of simple homogeneous structure and provided with cilia or a flagellum, might, I suppose, be regarded as either bacterial or infusorial forms, or less probably as zoospores, or possibly as embryos of nemat helminths. Other analogues may exist.*

Comparison with the immature young of nematode worms is alluded to, because it happens that Dr. Evans once found numerous embryos of a filaria in the blood of a camel in bad health and associated with four other camels affected with genuine "Surra;" and Mr. Steel also detected in the blood of a mule under experiment a nematode "worm;" the hæmatozoon under notice being, however, absent in both these instances. I never met with blood-filariae in the rat, nor had Dr. Lewis. Micro-filariae commonly present characters wholly diverse, being much larger in dimensions, cylindrical or vermiform, nonflagellate, of granular aspect or showing traces of internal organs, and sometimes enclosed within a delicate sheath; besides, the direction of movement is not uniform, and it has not been shown that these temporary tenants of the blood can be reproduced through inoculation.

As to comparison with spermatic elements, the late Dr. Lewis observed (in his second Memoir) that he was once inclined to think that the flagellated organisms of the rat might be the spermatozoa of some parasite hidden in the tissues of the animal, mentioning their amazing similarity to the spermatozooids of a tænia seen in the intestines of a rat, whose blood, however, was at the time free from organisms. The lateral membrane of the hæmatozoon would also call to mind the similar appendage of spermatic filaments perhaps elsewhere present than in certain lizards. But all such filaments move the thick end foremost, their flagellum being a propeller; and besides, they are not independent organisms capable of reproduction *per se*.

The bacterial character of these blood-parasites is disproved by their non-cellular aspect and by their contractile plasma, in which rapid changes of length and thickness are seen wholly unknown amongst the alloid filaments; moreover, their prompt decay after a few hours' keeping, with entire absence of signs of reproduction by division or spores, would negative such view. Perhaps the nearest approach to resemblance would be with the spirillum (or spirochæta) of human Relapsing Fever, which I mention because it has been

* I had purposely omitted in the text any allusion to the so-termed "hæmatozoa of malaria," which, after Dr. Laveran and others, have been recently recognised by Prof. W. Osler, and by him are in a certain sense associated with the organisms of "Surra" equines and of the rat. This omission was due to the absence of a personal knowledge of the blood-parasites often present in the febrile human subject; and having, since the text was despatched from Bombay, acquired some practical information here, I hope to be allowed to make good the defect in a later note below.

alluded to by several observers as regards appearances in the fresh blood of rats and equines, and has in the latter instance led to the organisms being designated as "spirilloids;" Mr. Steel's term seeming the more warrantable, since he found a distinctly recurring pyrexia to attend the presence of the organisms in mules and in animals infected from them. I could myself compare directly the living human parasite with that of the rat, finding no other than an incidental similarity in a peculiar twirling displacement of the red blood-discs, caused by movements of the active organisms present; watching for a time, indeed, both kinds of organisms ceased to move, and becoming rigid, drifted away towards the sides of the containing cell, when all resemblance ended, the spirochæta retaining its spiral form, speedily enlarging much and joining with other filaments to form a close network which at its nodes finally blends into a uniform, granular, zoogloea-like clump. The contrast here, even so far, with what has been described above of the rat organisms is sufficiently marked to indicate an essential difference in their nature, there being manifest, under similar conditions, a distinct tendency of the bacterium towards a certain development, and not so of the hæmatozoon. I might add that it is only when the *Spirochæta Obermeieri* in its most active state is, as it were, uncurled and variously twisting that it could be mistaken for the *monad*, since when more tranquil it appears as a much slenderer, shorter, and quite uniform spiral thread, darting indifferently backwards or forwards, and showing no flagellum at either of its equally obtuse ends. I also note that though morphologically apart, there sometimes obtains (*e.g.*, as regards the "Surra" organism) a biological resemblance—that, namely, of reproduction through inoculation; but such faculty manifestly pertains to both protophyta and protozoa.

As Anthrax in horses is said to be frequent in India, and sometimes liable to be confounded with the "Surra" disease, it may be worth pointing out that the *Bacillus anthracis* has in fresh blood the aspect of delicate homogeneous rods, either straight or slightly curved, with parallel sides and flattened ends; and often joining, as regards mere length as well as breadth they might compare with the "Surra" organism, whilst, on the other hand, their perfect quiescence alone would be distinctive. Inside the body after death, and outside at ordinary temperatures, the rods readily grow and produce their spores.

There now remains a possible identification of the blood parasite under review with organisms of the sub-kingdom Protozoa, forms of which are known to flourish in fluid media of animals with hardly more access of oxygen than obtains in the blood; and it would be with such directly nourished parasitic species, since a differentiation of integument and contents, nucleus or vacuole, mouth or anus, cannot here be made with certainty. Following Leuckart ("The Parasites of Man," translated by Mr. Hoyle, 1886), the identification then might be in advance of the rhizopods and sporozoa (coccidial forms of which may be seen in the rat's liver), and rather with the class of Infusoria, its order Flagellata—the flagellum being always confined to the anterior or oral extremity; next, particularly with the simpler Monad family, including the genera Ceromonas (with numerous free living species) and Trichomonas, which is wholly parasitic in the higher and lower animals, and is characterised by an oval body provided not only with a flagellum, but also with a longitudinal fringe. Thus, without my being in a position to criticise further, the view of Dr. E. M. Crookshank seems reasonable (*l.c.*), namely, that the organism in question may be relegated to this already-recognised genus—its sub-genus *Trichomonas sanguinis*, without resorting to the new terms Herpetomonas (Kent) or Hæmato-monas (Mitrophanow).

I am aware of certain objections to the view above proposed, and doubtless a decision of this sort is always open to revision; yet in connection therewith,

as bearing on assigned or possible sources of the parasite-contamination, it seems worth adding (from Leuckart) that these monads commonly live on putrefying substances, and are often found in countless numbers in water or in living animals, *e.g.*, the large intestine of frogs and toads, the paunch of ruminants, and cæcum of pig; also in the genital canals of the snail, the body-cavity of rotifers, the alimentary canal of millepedes and insects, being occasionally so frequent (especially in moths and flies) that whole tracts of the intestine are filled with them.

In the same connection I would here allude to the evident narrow place, limitation, or "endemicity" of both rat-infection and the "Surra" disease, with probably also a distinct "seasonal" variation of prevalence. Strict search on the lines now indicated seems to me promising as regards detection of the source or sources of these infections.

An external origin of the parasite, direct or mediate, being in high degree probable, regarding its mode of entry into the circulation, the successful experiments of veterinary officers proving that the "Surra" infection is directly communicable by way of the stomach, have an obvious practical bearing; and so, too, the equally prompt success of hypodermic inoculation, which shows the sufficiency of minute wounds of the skin and, presumed, of the mucous membranes generally, as a favouring local condition. The apparent absence of conveyance of the same morbid state through mere skin-contact, and through air-infection by way of the respiratory tract, should also be considered. It is not known if rats inhabiting the stables of infected horses or mules are primarily or specially affected; but Mr. Steel's negative experiments, quoted above, would tend to show that equines did not derive their disease from the bite of tainted rodents. The hæmatozoon of the rat seems more difficult of communication than the "Surra" monad, yet I have shown that it or its germs may be introduced into the circulation, *e.g.*, of the monkey, by way of the peritoneal lymph-sac; my own impression from the data (see above) being that a certain limited development had taken place in the monkey's blood, though this is uncertain, since entire blood-discs, while preserving their vital properties, can pass freely along the same lymph-channel (Dr. W. Murray, in the *Brit. Med. Jour.*, 29th Jan., 1887), and such are broader and less mobile structures than the full-grown parasite in question. Another conjecture arose from my finding in some rats, at the lower part of the ileum, many active monads apparently identical with species of *Cercomonas*, and in the duodenum, amidst bile-stained mucus, numerous larger ones resembling *Trichomonas* *sp.*, whose proximity to the common bile-duct suggested the possibility of entry into the liver (where *C.* has been met with), and thence into the circulation. As it happened there were no organisms in the blood of these rats, further remarks would be merely speculative; and I need only add that the concurrence of extraneous, intestinal, and blood monads, with a conceivable connection of the series, *inter se*, forms a topic analogous to that of such bacterial infection as the "spirillar," of human Relapsing Fever elsewhere alluded to by me.

Equally cursory in the scarcity of relevant facts must be any comment on the growth and reproduction of this hæmatozoon. The parasitic habit might be expected to modify these processes, as it does mere structure. According to Leuckart, the flagellate monads commonly are reproduced by division (longitudinally), or by conjugation, encystation, and the formation of countless spores possessed of much tenacity of life; and in individual cases there has been seen a quiescent state, leading to the production of abundant minute swarm-spores. Here what is known is, first, the co-presence in the blood with abounding grown organisms, sometimes clustering or blending, of numerous small motile particles and frequent cyst-like forms which have the aspect, at least, of reproductive elements at various stages of development,

and which nearly all observers have noted (see Dr. Crookshank's figures and some of mine); add also that whilst obviously plentiful growth must take place somewhere in the rat and horse's body, hitherto outside the blood no parent-source of the parasite has been detected. Mr. Steel's successful inoculation with fresh blood, in which at the time no parasites were detectable, is quite noteworthy, and corresponds with some experience of mine when studying the Relapsing Fever of man, the explanation being either that grown organisms had (as is possible) been overlooked, or that the new brood had sprung from germs contained in the blood (as also seemed likely in one of my cases). The second point to note is concurrent testimony regarding the advent of the hæmatozoon by intermittent succession of broods. I had not actually seen this in the rat, but apparently it was so in a healthy-looking dog in the possession of Dr. Lewis; and as regards the "Surra" infection, Dr. Evans had noticed its probability, whilst Mr. Steel has furnished definite affirmative evidence in both natural and imparted disease. Analogous thereto are the events in the human recurrent spirillar infection; only here the malady tends to subside by diminution and delay of the relapses, whilst Equine Relapsing Fever seems always to end fatally. Whatever prove the future explanation of this significant phenomenon, it will apply to both these kinds of blood-infection, and may apply also to the malarial, typhoid, and certain septic species. Lastly, I have to notice the fact that, so far as known, the hæmatozoon is not only limited to the blood-area, but is equally diffused throughout it, and the same datum was clearly ascertained for the spirillum of Relapsing Fever, by comparative scrutinies of blood taken immediately after death (of infected monkey) from each of the principal regions and viscera of the body.

Before quitting this part of the subject, there might be mentioned certain seeming counterfacts to some of the propositions above surmised. Thus, as regards the evanescent quality of the hæmatozoon, this would appear less marked than is stated of monads generally, Lewis in particular having remarked that the rat's organism was not very sensitive to the action of mercuric perchloride, whilst according to Leuckart this salt has in general such a prompt destructive action that its employment therapeutically seems to be indicated. Again, Mr. Steel once failed to propagate the "Surra" disease by administration *per oram* of the gastric and intestinal matters of a diseased mule; and further, what seems adverse to the asserted persistency of monad-germs, the subcutaneous injection of dried tainted blood also failed. Dr. Evans, too, found on two trials no effect after the swallowing of a water-mixture containing infected blood which had been kept for twenty-four hours and without signs of putridity no longer showed traces of the parasitic organisms. Analogous hereto was the failure at my hands of dried spirillum-blood to infect, although traces of that bacterium could be seen in the material used; and this circumstance induces me to remark, briefly, that the conditions of infection must really be complex, since three separate factors are necessarily concerned; namely, (1) a certain state of the infecting agent, (2) a certain mode of transmission, and (3) a certain state of recipient or new host.

The final topic I propose to glance at is the character and affinities of the equine disease which is associated with the hæmatozoon under review. The excellent descriptions published of "Surra" as prevalent at the east and west extremes of India, do not differ more than might be anticipated from innate variability and incidental circumstance. From them it may be gathered that here is a sub-acute, febrile, and usually fatal malady, presenting no other special lesion than that of the blood, arising endemically, and not spreading by contagion or infection; commonest during and after the rainy season, with no other particular relation to atmospheric states or to the soil: in a given

locality the distribution of disease may be irregular, and the outbreaks do not seem to last longer than a few seasons at a time, sporadic cases probably persisting or being introduced afresh. The entire clinical history is not fully known, on account of the non-continuous course of symptoms: at first were noticed fever, with jaundice, petechiæ of visible mucous membranes (eye and vagina), anasarca, sometimes albuminuria, always great prostration of strength and rapid wasting; death by exhaustion alone at the end of a few weeks; and at autopsy no specific coarse lesion seen (Evans). Afterwards it was clearly made out that the pyrexia assumes the form of pronounced (max. t. 105° - 7° F.) and well-defined exacerbations of 2 to 7 days' duration, which are separated by apyretic intervals lasting about as long—the first incubation period experimentally learnt being 4 to 7 days; and it is only during these successive "relapses" that the hepatic derangements and blood extravasations become prominent; thrombosis and embolisms may occur; anæmia is very marked (Steel). The duration of the disease, so far as ascertained, varies from about two months to perhaps a year; a long latency of the malady seems improbable (Evans); artificially induced disease may end acutely in twenty-one days or in a month or so (Steel). There are clinical modifications which need not be discussed here; antecedents and sequelæ are not fully made out. The mortality-rate is extremely high, recoveries being apparently unknown. Anatomical lesions seem to be connected with the morbid blood-state, and include localised hyperæmias of the intestinal mucosa, in the stomach sometimes stasis and sphacelus; petechial extravasations; serous and gelatinoid effusions in lymphatic areas, with occasional glandular intumescence; granular and fatty degeneration of solid tissues. The diagnosis of this disease is wholly due to the labour of sagacious experts; by means of the thermometer the characteristic febrile relapses can be ascertained, and by the microscope the pathognomonic aspect of the blood (see below); a period of ten days' watching may, however, be needful for certainty. In "Anthrax" the temperature is persistently high and the blood contains bacilli, and in nine cases out of ten this disease is of acute character, whereas in "Surra" the malady is more chronic, the pyrexia intermittent, and the blood then charged with "spirilloids" (Steel). Prognosis is unfavourable in the highest degree; and treatment, both general and special, having hitherto proved inefficacious, attention needs be directed to prophylactic and preventive measures.

As to etiology, it is stated that though new to science, "Surra" has long been recognised in its haunts, where as a rule enzootic it does sometimes assume an epizootic character (Evans). Adequately sustained inquiry made on the spot, concerning the predisposing and determining causes of the disease, is still a desideratum; only occasional and non-exclusive conditions, chiefly of mal-nutrition or mal-sanitation, being as yet elicited, there remains to note such more direct agencies as in the popular opinion produce this disease; *e.g.*, the bite of a large brown fly the size of a small bee (classification unknown), the feeding on certain kinds of grass, and the drinking of fouled, stagnant, marshy water, as mentioned by Dr. Evans, who himself found flukes in the liver of two "Surra" cases examined *post mortem*. The Indian veterinary observers seem unanimously disposed to regard the hæmatozoon as the immediate cause of the disease, the arguments put forth in support of such view being those held in analogous instances; *e.g.*, the spirillum fever, and also like, but more elaborately conclusive, in the Anthrax infection; it is asserted that this organism is never found in healthy equines (*a*), that it is invariably present in the diseased (*b*), and that its occurrence is peculiar to the diseased (*c*); further, there is, in the mule at least, the closest connection in time between its usual visible advent and the onset of febrile symptoms, with the additional feature of disappearance of the blood-organism just before

the acme and decline of specific pyrexia (Steel); and again during the apyretic interval ensuing, it is said that immature growing forms of the parasite are with little difficulty detectable (Mr. Gunn, A.V.D.); lastly, the absence of a strict relationship between the apparent number of organisms and the intensity of clinical symptoms would be no valid argument against a real connection here, because such symptoms are really complex phenomena, referable to a conjunction of influences and conditions. Judging from all the data, there is, I may add, ample evidence to warrant the assumption that the natural equine disease scrutinised by Dr. Evans and Messrs. Steel and Gunn was one and the same.

The remarkable fact that "Surra" is communicable by inoculation, and even by imbibition of the tainted blood, was determined promptly by its sagacious discoverer, and has been fully confirmed by the next observer, whose more elaborated data are worthy of close attention. Mr. Steel has published three separate accounts, with charts, of inoculated mules and one of the pony, which on comparison with others of the natural mule-disease appear so much alike as, in my opinion, to quite justify his statement that the "Surra" blood-infection, with all its attendants, can be readily, exactly, and exclusively reproduced at will. I am assured that adequate precautions were taken to ensure the absence of a natural acquirement of the disease in these several instances, which therefore, along with Dr. Evans's experiments, will serve to establish a truly fundamental datum.

To myself these observations were of particular interest, because of the aggregate clinical and pathological facts embodied in them demonstrating, further, a striking similarity to the phenomena of the spirillum-infection, with its attendants, as seen in the human subject. This similarity Mr. Steel has the credit of first clearly making evident, whether or not in veterinary medicine his proposed cognomen of "Equine Relapsing Fever" displace the indigenous term "Surra:" briefly, it consists (as regards inoculated cases) in the defined and but little shorter incubation-period of 4 to 7 days, with no marked general symptoms and no visible blood-contamination; then follows a succession of pronounced and defined pyretic and apyretic (incubatory) periods, of which two to six are shown in the charts, and during which characteristic signs of illness and blood-tainting regularly alternate with abatement of symptoms and disappearance of the hæmatozoon; after death the lesions found, so far as I perceive, being solely those of blood-deterioration, without the marks of local inflammation or other organic processes, either primary or in themselves sufficiently marked to account for disease. The differences here, which I note, concern details in the course of the pyretic events; these in three of the cases being, if equally pronounced, hardly so defined (*e.g.*, rigors and sweats not named) or so clearly separated by apyrexial days as is usual in the human disease; the point not, however, being wholly material, since fatal cases of Relapsing Fever and other specific infections of man are very apt to be irregular in their course: in the longest surviving of Mr. Steel's mules, where death occurred from an incidental internal embolism, the relapses were better marked, and from this instance it is learnt that the equine infection manifests no such tendency to decline by a deferring and shortening of the febrile attacks, as is manifested in the human infection; thus the mule's series shows a succession of febrile events lasting 7, 3, 4, 3, 4, 6 days, with apyretic intervals of a much shorter and not lengthening succession of 3, 2, 2, 3, 2 days' duration: add to these data the commonly larger number of relapses (17 have been counted), and it will become evident that the Relapsing Fever of equines is, comparatively, much the more prolonged, intense, and intrinsically exhausting; indeed, so far from possessing a spontaneously abating tendency, once supervening, it never departs until life itself ceases, and this, happily, is not the case with

the spirillum-fever of man. Respecting the more prolonged illnesses naturally acquired precise information is as yet but scanty, consisting of three cases given by Dr. Evans, in which the animals were destroyed, and of six examples detailed by Mr. Steel, in which natural demise occurred; of these last three had been first entered under a provisional diagnosis of "Gastric Typhoid" (in allusion to the gastric ulcers sometimes found in Burma cases), dying on the 53rd, 59th, and 93rd day of disease respectively, so far as ascertained; and as the blood-parasites were present in all, there is here, too, evidence of the much longer persistence of the infection than ever was learnt by me as regards the human spirillum-fever. What may be the precise state of the blood and viscera in cases of "Surra" lingering for six or twelve months does not appear to be ascertained; nor apparently have recoveries been ever watched throughout, and hence the question of immunity or of an increased liability cannot yet be raised. It is well known that no immunity against reinfection is imparted by an attack of "spirillum-fever."

As to the character of the disease inoculable in animals of different species from the equines and man respectively, available data are but few. I found the spirillum-infection to be communicable only to a quadrumanous animal, in which the blood-parasites, with their clinical attendants, are even readily reproduced, and, as sometimes happens in the human subject, the first outbreak of illness may prove fatal; it being also remarkable that after the more usual event of recovery, relapses were extremely rare (if ever occurring) in the monkey. As regards the equine disease, Mr. Steel succeeded on first attempt in similarly communicating this to a monkey of probably similar species, whose chart shows the animal to have at first and for 30 days at least truly acquired the specific recurring fever; numerous later relapses are also said to have occurred, but the state of the blood is not recorded, and the monkey died after two months or more with the complication of ulcers and necrosis of the foot, so that possibly (in my opinion) septicæmia had finally supervened, and other data for comparison are desirable. Adverting, next, to disease artificially induced in the dog, a notable divergence of results becomes evident; for whilst, like others, I failed to communicate the spirillum-infection from man to the healthy common dog, yet three veterinary surgeons have readily transmitted the equine "Surra" infection to dogs whose blood was, in two instances at least, previously ascertained to be free from the parasites. From these data it appears that a healthy pup, infected, probably by the mouth, on or about 5th October, 1880, early showed abundant blood-contamination (Evans), which was again seen at intervals until 3rd November; shortly after this the puppy got the "distemper," and by an injury lost the use of an eye; its blood, however, was free from organisms on 15th January, 1881, 12th and 28th February, and so late as 24th March (Lewis, second Memoir), the general condition and ultimate fate of the animal being unknown. Mr. Gunn inoculated a dog on 20th September, 1886, and on 24th found many parasites in its blood; the animal after that date, for a period not stated, continued playful and healthy-looking, nose cold, but yet the blood was "crowded more or less with the special organisms, more or less numerous as indicated by the internal temperature;" this observer inferring that an "animal may be apparently quite healthy, and yet have the disease in his system." Adverting, lastly, to the more precise experiment of Mr. Steel, there is the chart and history of a young dog inoculated and given tainted mule's flesh to eat on 13th January, 1881: blood-parasite first seen on the 24th, and on 28th animal dull, had slight cough, and exhibited pain when pressed on the loins; she was very feverish while the blood contained parasites, and the conjunctivæ became pale in the extreme; she was allowed to eat portions of all the mules which died, but her appetite became very capricious. On 25th February the animal was found very dull, feverish, and thin, with a swelling on each side of the head,

also the left inguinal glands swollen, and the body in general so tender that the animal shrieked when lifted from the ground; in the blood no parasite seen, but many disintegrated corpuscles; the glandular swellings increased, and then soon appeared œdema of the perineum, turgescence of the throat and muzzle, extreme prostration, swelling of the hind quarters, coldness of the body, and death on 4th March (fifty-one days after first inoculation); the chart given showing, first, a series of six or seven distinct febrile exacerbations of 3 to 5 days' duration, and separated by brief apyretic intervals of 2 to 4 days' duration, but afterwards displaying more irregularities with days of great depression of temperature. Upon inquiry of Mr. Steel, I learn his opinion that here, as in the monkey (which died with similar sequelar signs of septic infection), the later illness was really part of the "Surra" disease pure and simple; autopsy of the dog was made too late to be of real value.

According to the above comparative data, the "Surra" infection, like the "spirillar," is readily implanted in the monkey, whilst retaining much of its superior gravity, both instances, however, showing a certain diminution of degree in this transfer. As regards the dog, in which the spirillar contagion is wholly inefficacious, if the first-named results be regarded apart, the case becomes analogous to that of my experimental monkey inoculated with the rat's organism, in so far as showing that the mere presence of the active monads did not induce palpable morbid signs; but the last result indicates, at least, that before deciding on the real effect of the "Surra" inoculation precise and prolonged observations should be made. Viewing the whole series together, it seems legitimate to infer that the "Surra" infection admits of considerably wide limits of intensity, and this independently of the visible quantity of organisms, so far as may be judged from statements of observers; being in some instances (as in equines) almost inevitably fatal, in others (as in the monkey) less immediately so, and lastly, in the dog not necessarily occasioning early serious illness.

In the course of comparing phenomena I have noted as a similarity of the equine to the human Relapsing Fever the occurrence of a ravenous appetite in the sick during even the febrile state, and without much manifest benefit when gratified; also a tendency to intensifying of symptoms (*e.g.*, the jaundice and petechiæ) at the acme of the successive febrile events, according to Mr. Steel, who seems to refer to a clustering of the organisms at this time such as I had connected with incipient sporing of the human blood-spirillum then. The remarkable tendency of the pathogenous flagellated organisms to attach themselves to or attack the red blood-discs is insisted on, even a disintegration of the corpuscles being thus imagined possible; such tendency is apparent in the organisms of the rat's blood, without seeming so peculiar, and in less degree it is notable of the fever-spirillum in man. Coarse deterioration of the blood is not apparent in the rat, and not marked in equines nearly so much as in Anthrax; it is little evident in spirillum-fever; minuter changes in "Surra" are expressly stated to follow the advent of the parasite, and to consist of increase of white cells, diminution of the red, with an appearance of granular specks in the serum (Evans). If the parasite be viewed as the immediate infecting agent, there becomes evident a similarity of equine to human fever-blood, in so far that loss of infecting power ensues on desiccation; but, on the other hand, a contrast with Anthrax as regards ingested blood, since in order to infect this must contain spores of the bacillus, whilst germs of the monad will either not suffice or perish far sooner, as Dr. Evans's experiment shows. "Surra" organisms (or the spirillar) were not found in the secreta or excreta, though lately quiescent monad-parasites have, it is said, been detected in the urine during apyretic intervals (Gunn); Anthrax-bacilli are to be seen in bile, milk, and the urine during illness. Transmission of each of these infections to the foetus seems to be an uncertain datum; the ready

communicability of Anthrax and spirillum infection to man appears in marked contrast to the non-communicability of the monad-infection, so far as known (Steel). It is worth adding that the site of successful inoculation of virus in all three cases may present no sign of local irritation ; whilst after unsuccessful attempts local swelling may follow, not necessarily suppurating ; such were also noted in unaffected ruminants after "Surra" inoculation (Steel) ; they were not observed after use of tainted rat's blood.

For some other comparative points of interest reference must be made to the following paragraph, and my work on "Spirillum-fever" would also afford some aid in following out details :—

"Amidst the obscurity surrounding a new disease, as yet but imperfectly investigated, it would be warrantable to seek for light by way of analogy with better-known diseases of the same class ; and the search would be more encouraging if there were available a satisfactory standard or type to which to refer. Such a type exists in Anthrax, the history of which is full of applications to the case in hand. (See 'Leçons sur le Charbon, par Dr. J. Strauss,' in *Le Progrès Médical*, 1886-87.) Thus, as to general features, Anthrax may affect equines on a large scale, preserving there the characters it displays in bovines and sheep, its commoner victims ; it also is distributed endemically, being of telluric, though not of miasmatic origin ; and its severity is hardly less than that of 'Surra.' Next, as to clinical and anatomical diagnosis, 'Anthrax Fever' is the common natural form of the infection, in which the temperature may reach 105° — 108° F., being attended with chills and sweats, restlessness, distress, troubles of the circulation, exhaustion, stupor, convulsions, and coma ; these symptoms extending over 12—24 hours, or sooner ending fatally in young and plethoric subjects ; after death the blood is found and remains black, all the internal organs are deeply congested, with ecchymosis in the intestinal canal and stomach and occasional local sphacelus ; the lymphatic glands are implicated, and in the horse the superficial and deep connective tissue shows gelatiniform infiltration ; the scanty urine and stools may be bloody. The characteristic bacillar aspect of the blood in this disease was but very gradually discriminated. The causation of the malady was for long attributed to collateral conditions—non-sanitary of all kinds, foul emanations, peculiarities of soil (marshy), and combinations of general agencies leading to the view of its spontaneous origin ; the special operation of flies (unarmed) on excoriated surfaces was determined by experiment, and it was soon learnt that the disease is communicable by even slight inoculations, though neither contagious nor infectious in the ordinary sense. Rats are with difficulty inoculated, and dogs do not suffer on drinking tainted blood, but the well-known experiments with cultivated bacilli demonstrate that the apparent immunity of some species of animals is in high degree contingent. One attack of Anthrax does for a time at least protect against reinfection. The above general view will serve to indicate points of fundamental resemblance between Anthrax Fever and the Relapsing Fever of equines and of man ; also between these and other infective or septic diseases ; there are differences, which, however, seem subordinate or merely of degree, and enough to separate the 'Surra' disease from other members of the class of acute or sub-acute specific infections. The ultimate difference pertains to the infecting organism in each instance ; and as to certain minor variations noted of the hæmatozoon under review in different animals, they are probably no greater than is known of the *Bacillus anthracis* in different species. The indigenous race of horses in India, as of sheep in Algiers, seems far less liable to Anthrax than are imported races."

Concluding Remarks on the Blood-contamination under Review.—There is to note, first, that Dr. Griffith Evans's discovery in 1880 of the protozoid blood-parasite characterising the equine "Surra" malady truly merits the epithet of

epoch-making ; for until that date no instance was known of the association of acute infective disease with organised blood-contamination other than the protophytal. And even if this example seem exceptional, it yet possesses much pathological importance as evidence of the close similarity of morbid processes, whether associated with plant or with animal organisms of elementary character ; more probably, however, the "Surra" affection will not long remain unique, proving to be only the pioneer of a series of the kind. In the abstract there seems no valid reason why hæmatozoa living as hæmatophytes should not be attended with analogous or even identical symptoms of derangement in hosts of the same species ; but hitherto such an assertion as this, if doubted, could not be suitably tested, and hence the cognomen of "Equine Relapsing Fever" (employed by Mr. Steel) must now be interpreted as in a special degree significant. To the best of my recollection, none of the hæmatophytes are harmless tenants of the blood, all being possessed of pathogenetic properties, and all, moreover, belonging to the fungus (or alga) group of schizomycetes ; whereas no such uniformity of property or of classification obtains amongst the known hæmatozoa, and hence of these an important differentiation may and has now to be made. Thus, on the one hand, there are the familiar instances of high-grade vertebrates whose blood teems with large and active organisms, without for a time at least any very manifest prejudice to their own health ; these instances, *e.g.*, of birds and many mammals (reptiles and fishes are not excluded) being sometimes quoted in support of the view that all organisms appearing in the blood have but a subordinate meaning ; and on the other hand there is the instance of this "Surra" disease, in which, according to concurrent testimony, the horse or mule in whose blood minute organisms appear, of far less formidable aspect than embryo-worms, is doomed to death, if less quickly, not less surely than an equine infected with the bacillus of Anthrax. Limiting attention to these contrasted data, a reasonable explanation of the pathological differences herein noted might, I think, be found in the circumstance that embryo trematodes and nematodes make use of the circulation chiefly, if not wholly, as a means of transport, neither developing nor even growing larger therein, the persistent egg-sac of some being a palpable bar to all but simplest nutritive interchanges ; moreover, these filariæ remain but transitorily within the blood-vessels, being probably after a few hours either destroyed or extruded, in neither of which processes is there a conceivable necessity of serious impairment being done to the constantly replenished and purified blood. Some deterioration of the inhabited media is, indeed, inevitable, if not demonstrable ; and account must be taken of the mechanical lesions occasionally (at least) resulting from impaction of the worm-parent or offspring in the blood and lymph channels of the hosts' body, with consequent œdema and hæmorrhage, either interstitial or free ; yet upon consideration it will be evident enough that all such series of morbid changes are of a totally different character from the profounder alterations characterising veritable blood-infections, and could not be deemed reproducible in healthy subjects by inoculation of a blood-drop, as may be the "Surra" and Anthrax diseases entire.

The last topic I have to allude to is the remarkable contrast of symptoms offered by the rodent and the equine when their blood is equally infested by an organism morphologically identical in the two cases ; thus, as already described, the rat then appearing to be altogether unaffected in its health, whilst the horse or mule suffers greatly and is certain presently to die. So far as I am aware, there is not known any strictly similar instance to this amongst the hæmozoic infection, nor any strictly analogous amongst the hæmophytic ; yet upon analysis and comparison of all the data, it seems to me that the peculiarity of the present case rests on the conjunction of phenomena

presented rather than upon any single phenomenon, and therefore it may be most convenient to consider separately the pathological state involved and the organism concerned. As regards morbid symptoms, whilst in the horse and mule these become so marked, they are described as being very insidious at their beginning, and liable to apparently complete intermissions. Animals at work have been found to present a highly contaminated state of the blood; others have died suddenly or unexpectedly, and there are some natural variations of symptoms in different provinces and between the horse and mule. These facts are mentioned here with reference to the likely detection or non-detection of morbid signs in animals not domesticated and only casually inspected; even in the rat at Bombay it was not clear to me that infected animals did not at some time and in some manner or degree suffer from their blood-contamination, the probability being that they did so suffer; and as regards the few instances reported of deer, frogs, and fishes in whose blood protozoa have been detected without the remark being made of illness associated therewith, this datum, too, is a negative one and similarly open to uncertainty. I think also that the "Surra" data respecting inoculated dogs raise the question whether these animals may not sometimes suffer, Mr. Steel's experiment pointing to the affirmative, and that with the monkey being likewise noteworthy as a variation from the parent type; and briefly, there appears to me some indication that morbid signs amongst the different species of animals being likely to differ, there will eventually be elicited a transitional series of such phenomena concurrent with one and the same monad blood-contamination, beginning with the mildest, *e.g.*, in rat or some dogs, and ending with severest, *e.g.*, in equines. Such inference would be supported by analogy with the Anthrax infection, concerning which it is said that there is nothing fixed or absolute in the receptivity or the immunity of any one species, and that variations occur amongst even individuals of the same species (Straus, *l.c.*, *Douzième Leçon*); thus, rats prove to be only exceptionally inoculable, and sheep of Algerian race are naturally almost wholly immune to Anthrax, analogous to which fact is the asserted non-liability to "Surra" of the ass, whilst the horse and the hybrid mule are both highly susceptible. The present topic might be further illustrated, but it will suffice if a fairly reasonable explanation of some difficulties be already apparent. Perhaps the greatest difficulty, however, yet remains, that, namely, which requires for its solution either the assumption that the hæmatozoon in question has *per se* no essential connection with the symptoms of "Surra," being only an attendant or quasi-incidental phenomenon (*a*), or else the admission that the hæmatozoon may retain its morphological aspect and capacity of life whilst parting with all or most of its virulent biological properties (*b*). Regarding, first, the relationship of organism to morbidity, nothing new has yet been elicited from study of this equine "Surra" disease. The original observers were distinctly of opinion that the virus of the disease is represented by the organism, but hitherto the evidence goes no further than was reached by experiment with another infective organism, the *Spirillum Obermeieri*. Thus in my essays of nearly ten years back I was able to show that the mere presence of the spirillum did not necessarily entail fever or other marked symptoms of derangement, having on five separate occasions of special study detected in the blood this organism for a period of 24 to 72 hours prior to the onset of the febrile "relapse." This I regarded, and do still, as directly adverse to the doctrine that the spirillum is an epi-phenomenon the result of diseased action; the argument has been summarised elsewhere, and in this place I need only point out the analogy here with the hæmatozoon of "Surra," which I understand may sometimes be present early in the horse's blood when no other characteristic symptoms were noted, and which when transmitted to the dog may, sometimes at least, flourish periodically for

weeks without the accompaniment of manifest illness ; the rat, again, acquires its infection doubtless from a different source, and commonly suffers even less. That data of this kind, showing a reduced connection—chronological and dynamic—or gradual disconnection between a blood organism and symptoms of disease, are not necessarily indicative of a primary and fundamental separation between the two series of phenomena, has, I think, been fully demonstrated for the longest and deepest studied of all the infective diseases ; and to Anthrax I must again refer for analogical evidence bearing on the chief seeming anomaly found in the monad blood-infection under review. In that disease the infective organism is a bacillus which can be isolated and cultivated apart, there under certain conditions becoming enfeebled as to its virulent properties, whilst “morphologically the attenuated bacillus differs but little or not at all from the most virulent bacillus ; the filaments, however, seem a little shorter and more divided, and culture-aspects less luxuriant also differ slightly ; the spores arising from such culture possess the same modified properties as the mycelium from which they spring” (Straus, *XI^{me} Leçon*, *l.c.*, January, 1887) ; according, therefore, to this datum, the admission is warrantable that the protozoic infecting organism, while retaining its morphological aspects, may yet, under conditions, lose some or most of its virulent properties. It is enough, for my purpose, thus to indicate a possible explanation of the seeming harmlessness of the rat-organism, as compared with the virulence of the equine, which is yet of identical aspect. I am indeed aware of the frequent fallacies of analogical inference, but the instance in hand seems unusually free from such risks, if an opinion can be safely based upon the numerous and direct applications of the Anthrax data to the facts of the “Surra” disease so far as these are known ; the task, however, of demonstrating in detail such applications had best be deferred until there become available more data regarding “Surra” of the precise form of those so laboriously acquired for “Anthrax ;” and as for encouragement to work in India, it seems to me hard to conceive a more promising field of research than the one which has been the subject of the present remarks.

NOTE.—Respecting the aspect of blood and bacillus of animals inoculated with the attenuated Anthrax virus, I have not met with definite statements. If the organism can be seen to flourish in the blood, whilst producing no other than an occult effect, then the analogy and comparison with the monad data would be complete ; such completeness is not, however, essential to the argument above. It seems that reduction of the virulence of Anthrax by transmission through different species of animals is not yet a realised notion ; but as by successive inoculations an attenuated bacillus can be raised to full strength, possibly the monad-virus has undergone such augmentation from its lower to highest degrees. Lastly, in employing analogy not against facts so much as in their explanation, no canon of science has been violated ; and it is generally admitted that the verified Anthrax data have a bearing far beyond the range of the single subject to which they pertain.

THE INTERNATIONAL VETERINARY CONGRESS.

THIS Congress will assemble at Paris on September 2nd, and continue its sittings until Sunday, 8th, the meetings being held at the Hôtel de la Société de Géographie, 178, Boulevard Saint-Germain. The chief subjects for discussion are—1. Tuberculosis ; 2. International Sanitary Service ; 3. Compensation for Slaughter ; 4. Prophylaxy of Contagious Pleuro-pneumonia ; 5. Inspection of Flesh.

Not only is there, besides the great attractions afforded by the Great Exhibition, a universal exhibition of horses for breeding purposes, but

during the week the statue erected to the memory of the late Professor Bouley will be inaugurated at the Alfort Veterinary School.

It is to be hoped that a large contingent of our colleagues in this country will avail themselves of the opportunities offered for acquainting themselves with their professional *confreres* on the Continent, and assist in promoting progress by taking part in the discussions on the important subjects brought before the Congress.

Those who intend to be present should address themselves without delay to M. Capon, 193, Rue de l'Université, Paris (Seine).

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

ANNUAL MEETING, HELD MONDAY 6TH, 1889.

Professor PRITCHARD, President, in the Chair.

Present—Nicholson Almond, J. W. Axe, Geo. A. Banham, J. D. Barford, E. Beddard, Thomas Briggs, G. T. Brown, Jos. Hall Brown, sen., W. F. Bennett, A. L. Butters, T. Caldecott, B. Cartledge, M. Clarke, T. Corby, Jno. A. W. Dollar, T. A. Dollar, Wm. W. Dollar, Edward Coleman Dray, John D. Edwards, G. Evans, Sir Frederick Fitzwygram, C. J. Fleetwood, Dr. George Fleming, J. Fraser, Joseph M. Gillingham, G. H. Golding, George Jas. Gould, Thomas Greaves, Fred. Harrison, S. E. Holman, J. Sutcliffe Hurndall, Arthur H. Jacobs, H. Kidd, Geo. Edw. King, Herbert King, J. D. Lambert, T. E. W. Lewis, Clement Lowe, J. Mackinder, J. McCall, H. Mahon, N. W. Malcolm, J. B. Martin, W. Mole, Thomas Moore, Wm. Mulvey, Alfred J. Owles, W. Price, W. Pritchard, Geo. Reddish, W. Reekie, W. S. Rudd, T. H. Ridler, A. G. Rogers, A. Rogerson, William Shipley, sen., Sir H. Simpson, Jas. F. Simpson, F. Smith, Thos. H. Stidston, P. Taylor, W. B. Walters, Jno. Ward, W. Owen Williams, Wm. Wilson, Wm. Woods, F. W. Wragg, and the Secretary.

The SECRETARY read the result of the voting for Members of Council:—Walley 594, Mulvey 526, Taylor 448, Cartledge 437, Kidd 433, and Simcocks 386. These gentlemen were elected. For other candidates the voting was:—Banham 375, Dray 370, Carter 353, Blakeway 345, Briggs 248, Anderson 231, Wilson 206, Mackinder 127.

The PRESIDENT said a request had been made that a reporter, other than the one employed by the College, should be admitted to take report of the meeting. He (the President) was under the impression that no reporter, except their own, had ever been admitted to an annual meeting. The reporter who had applied represented the *Veterinary Record*. Reporters had been present at council meetings, but never at annual meetings.

It was decided that reporters from any of the veterinary periodicals be allowed to attend annual general meetings.

A motion that the members should be supplied with a *verbatim* report of what took place at the meeting was negatived, only eight voting for it.

Mr. DOLLAR referred to the Fellowship degree, and then moved that it was wrong in principle for a member of Council to act as an examiner.

Mr. HURNDALL made some remarks on Clause 9, as to its abolition, and seconded Mr. Dollar's motion.

Mr. PRICE wished to comment upon this very small report. Every year it seemed to be gradually dwindling. He thought that the report should have contained the thanks of the Council to the examiners who had served the profession so well, especially to J. Roalfe Cox, who had retired. Then as to

the Registration Committee, they had during the past year done very good and effectual service to the profession. They had gone through the Register and had struck 105 names off the Register in consequence of "death or relinquishment of practice." This showed that they had performed their part of the programme remarkably well. With regard to the Committee on Hereditary Disease in the Horse, a circular letter was sent to the 2,500 members of the College; but it would be interesting to know how many were returned filled up. He also wished to know what was the meaning of a circular dated November 12th, 1888, convening a special meeting of the Council for the purpose of considering a letter sent to the President, stating that the writers were informed that it was "contemplated to send a circular to the members of the profession on the subject of Hereditary Diseases in Horses, and we beg to request that the circular be sent to none but members of the Royal College of Veterinary Surgeons. We further beg to request that you will not recognise existing practitioners as members of the profession by sending them the circular without a resolution of the Council of the Royal College of Veterinary Surgeons authorising you to do so." It would seem that the President, without the authority of the Council, was anxious to send circulars to all members of the profession, and also to the existing practitioners. Of course those gentlemen who signed that letter were quite surprised that he should recognise the existing practitioners as members of the profession; that was the only inference he could draw from it. With regard to the "attendance of members of Council," he thought the number of committees that each member was upon should be specified, as otherwise a fair inference could not be drawn. The item for rates and taxes, £94 os. 6d., seemed a very large one, and he should recommend the Council to appeal.

The PRESIDENT said they had appealed, and they got a considerable reduction.

Mr. PRICE said he could not understand the item for "Annual Dinner," £18 2s. 9d. If he came to the dinner he paid for it. It seemed to represent some sixteen or seventeen who never paid at all. The item for printing, stationery, etc., £203 2s. 2d., seemed very large. He hoped the Council would give these little things their careful and earnest attention. He would not mention anything about the salary to Secretary, £250, because he knew the Secretary well earned his money. With regard to Clause 9, he considered that as a member of the profession he had been robbed of his rights and privileges. They had been disenfranchised without rhyme or reason. He maintained that as long as he conducted himself in a gentlemanly manner he had a right, if members chose to elect him to the Council, to represent them on that Council. He hoped the Council would assist them in this, and if it meant a fresh Act of Parliament let them have it. If the Council could not afford to pay for it the profession would. He earnestly asked the Council to take the poor members into consideration and to reinstate them, so as to give them a chance of representing the profession in the future politics that they had to deal with.

Mr. DOLLAR's motion, "That it is wrong in principle for a member of Council to act as an examiner," was then put to the meeting and lost, twenty-two voting for it and twenty-four against.

Mr. HURNDALL moved that the voting on the above motion be taken by ballot.

Mr. DOLLAR seconded.

Mr. BANHAM moved as an amendment that the Council proceed to the next business.

Mr. OWLES seconded.

The amendment was put and carried by thirty-three to thirteen.

Mr. WARD said he did not understand how there could have been any reduction in the rates and taxes, seeing that the year before last they were £63 18s. 4d., while this year they were £94.

The SECRETARY explained that last year included five quarters, and the previous one only three.

Mr. WARD thought the item "furniture, repairs, etc.," £54 14s. 9d., was rather heavy.

The SECRETARY said it included repairs to the building and outside painting.

Mr. CARTLEDGE proposed the adoption of the report.

Mr. WRAGG seconded.

Mr. KIDD asked the meaning of the item at the bottom of the account, "travelling expenses, £13 1s. 6d."

The SECRETARY said there were four examiners' fees held over because the Council had not the authority to pay them till after the meeting. These were the fees paid the examiners for travelling expenses.

Mr. PRICE asked what was meant by "dividend on dishonoured cheque, £3 3s."

The SECRETARY said this gentleman had a banking account, and the bank failed. He tendered them a cheque for £10 10s. This was a third instalment, and it was now paid off within a few shillings.

Sir HENRY SIMPSON said a question had been asked about the item for the annual dinner. He wished to be allowed to explain that. He had the honour of being President last year, and it was thought it was not an unbecoming thing for the profession to be honoured by the presence of members of the Royal family if possible at the annual dinner, it being a special year, the Jubilee year. They had sent an address from the College to the Queen, who had been graciously pleased to receive the same; and it was thought it would do the profession no harm, but might be the means of doing it some good by bringing it a little more prominently before the public. He took occasion to ask the Council if they were willing that the expense should be borne by the College. It was his intention to invite not only the Prince of Wales and the Duke of Cambridge, but also other persons distinguished in the army and other services and professions. The purse-strings were held very tightly, and there was a good deal of opposition; and it ended in Professor Brown coming to the rescue, and proposing that £25 should be granted for the purpose. That was a totally inadequate sum to invite fifty persons of distinction to this dinner, and there were preliminary expenses to be incurred in sending circulars to the members. The cost of postage, printing, etc., absorbed £18 out of the £25. That was represented by the item in the accounts, and he had the honour of inviting fifty guests at his own expense.

Mr. PRICE said he was perfectly satisfied with that answer. He should like to have some information with regard to the circular he had referred to.

The PRESIDENT said the matter was most thoroughly discussed at the Council before the steps were taken. He had never urged that the circular should be sent to unqualified members of the profession.

Mr. PRICE said that certainly was the information he gained from the circular, that the President was anxious that the unqualified registered practitioners should have that circular on hereditary disease sent to them to fill up. That was the whole pith of the circular.

The PRESIDENT said it was not the fact; it never was urged by him.

Dr. EVANS invited the attention of the Council to the state of the museum. He thought they should spend some money in labelling and cataloguing the museum and keeping it in order.

The PRESIDENT said he quite agreed. A Committee had been formed to look into the matter, and he thought that some renovation would shortly be undertaken.

Mr. HURNDALL, with reference to the dinner, said he objected on principle to pay for wine drunk by other people. He thought, instead of charging 25s. for a ticket, they should charge 7s. 6d. or 10s. 6d. for the dinner, and let each person pay for his own wine as he thought fit. He could name some half-dozen members who could be at the dinner who, as a matter of principle, would not be there because this mode of payment had been inaugurated. He would submit it for their consideration for another year.

The motion for the adoption of the report was then agreed to.

The PRESIDENT said that Mr. Hurndall's proposal with regard to the dinner had been thoroughly tried, and had completely failed to improve matters.

This concluded the business.

Mr. HURNDALL said, as he had been rather a troublesome member, he should be pleased to propose a hearty vote of thanks to Professor Pritchard for occupying the chair. A meeting of that description could not be presided over without some difficulty, but their President had done all that could possibly be done under the circumstances. They felt that their profession was progressing, and it would continue to do so if they were allowed to ventilate their feelings as they had been without interruption.

The resolution was adopted.

This terminated the business.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriar's Hotel, Manchester, on March 27th.

Present:—E. Faulkner, president; Messrs. Peter Taylor, W. A. Taylor, S. Locke, T. Hopkins, J. B. Wolstenholme, Thomas Greaves, J. Moore, P. Pike, all of Manchester; Professor Penberthy, Royal Veterinary College; Messrs. H. Kidd, Hungerford; A. H. Darwell, Northwich; H. Ferguson, Warrington; T. A. Dollar, London; R. C. Edwards, Chester; Jas. Eltoft, Lancaster; Thomas Briggs, Bury; J. H. Carter, Burnley; W. H. Bridge, Bolton; J. Urmson, Bolton; E. T. Leather, Cape Town; T. Blakeway, Chaddesley; T. Dobie, Birkenhead; A. M. Michaelis, Stockport; A. Munro, Altrincham; J. Faulkner, Rochdale; W. Hall, Royton; E. S. Gubbin, Glossop, S. Chambers, Huddersfield; W. Noar, Bury; A. J. Jones, Manchester; and the Secretary, Liverpool.

Amongst the medical gentlemen present were included Dr. Cullingworth, London; Dr. Thomas, Preston; and Drs. Sinclair, Wilde, Rhodes, Wolstenholme, Hutton, Nichol, Coghlan, and Fairclough, all of Manchester.

Letters of apology regretting their inability to attend were received from a large number of gentlemen, including Professors Williams, Walley, McCall, McFadyean, Axe, Sir H. Simpson, J. F. Simpson, H. Olver, Dr. Fleming, etc., etc.

Messrs. Ernest S. Gubbin, of Glossop, and William Hall, of Royton, were unanimously elected members of the Association.

The meeting was afterwards augmented by the attendance of members of the Manchester Pathological Society to hear Mr. Wolstenholme's paper.

The PRESIDENT said he had the greatest possible pleasure in welcoming their visitors and in thanking them for the very great interest they showed in the subject of Mr. Wolstenholme's paper. He was sure the discussion would be entered upon by all with thoroughly open minds, and that the outcome would be satisfactory to the interests of truth.

Mr. J. B. WOLSTENHOLME then read his paper on "Puerperal Apoplexy in the Cow: Is it analogous to Puerperal Fever in the Human Female?"

Mr. PRESIDENT and GENTLEMEN,—Permit me to thank you for granting an opportunity of bringing before the two Societies a subject for discussion this

evening, and also to express the pleasure I take in witnessing these branches of medicine join to consider a question in pathology.

In many senses we are the creatures of circumstances, but this evening I feel myself especially so, inasmuch as a casual letter to *The Manchester Guardian* in October last has determined my position, and rendered the introduction of this subject imperative.

For some time prior to this circumstance, a correspondence had been progressing in that paper on "Milk Fever in Cows," was it contagious and what were the best prophylactic and curative means to be adopted? These communications were to me interesting, because it afforded to intelligent farmers who were deeply concerned, the opportunity to compare notes, and record what they considered to be of value. Nothing of special moment to the veterinary surgeon appeared, until a letter which discussed "the half-starving treatment," concluded with a significant suggestion. With your permission I will at this point introduce extracts from these letters.

On October 11th the correspondence commenced with a letter signed "Henry Waring," which offered all cow-keepers an unfailing preventive of great simplicity, viz.: "Half starve the cow for a few days before calving."

On October 18th appeared another letter signed "A. B.," which finished with a reference to a lecture by Dr. Cullingworth, of London, on "Puerperal Fever," and a question whether "what we call milk fever in cows may not be identical with the fever referred to amongst women."

On October 25th, Mr. J. B. Wolstenholme, wrote: "Milk fever in veterinary literature is synonymous with 'parturient apoplexy' and 'dropping after calving.' Parturient Fever is a totally different disease, being due to the presence of micro-organisms in the blood, giving rise to what is commonly called 'blood poisoning.' It is highly contagious, and is accompanied by high temperature, etc. Parturient Apoplexy, so far as I know, is a disease peculiar to the bovine species, and then only when in a state of domestication. It is in no sense a febrile disease, the popular term 'fever' being a misnomer. Indeed, the temperature is rather lower than normal, and no micro-organisms have yet been discovered in the blood which are considered to be in any way connected with it."

On November 8th the subject is resumed by "A. B.," who writes:—"Not being satisfied with Mr. Wolstenholme's answer as to the analogy between Puerperal Fever in the human female and what has been called Milk Fever in cattle, I communicated with Dr. Cullingworth, obstetric physician to St. Thomas's Hospital, London, whose lecture I referred to in my query. That gentleman, it will be seen from copy of his letter below, has no doubt as to the analogy, and after reading his address and after calling to mind my own experience, I feel convinced he is right."

Then follows Dr. Cullingworth's letter, which says:—"The disease which formed the subject of my lecture was formerly supposed to be due to an accumulation of milk in the veins, just as Mr. Waring considers the Milk Fever in cattle to be caused now. That and many other equally plausible theories have had their day in connection with human pathology, and have been long ago disproved. I have no doubt at all that the disease from which your cattle died is analogous to puerperal fever in the human female."

To this Mr. Wolstenholme replied on November 15th:—"I know something of the literature of puerperal fever in the human subject, and by this means have no difficulty in recognising the analogy between it and what we call Puerperal or Parturient Fever of the cow, of the mare, the ewe, and the bitch. Not only do we recognise this, but we are fully aware of the causes which give rise to it. We know of its septic, contagious properties. But with respect to Parturient Apoplexy the case is altogether different, and I cannot but express my fear that Dr. Cullingworth does not sufficiently under-

stand the clinical and *post-mortem* divergences which exist, and that he is not acquainted with the literature on the subject."

To this Dr. Cullingworth says in a letter published on November 19th:—"In reply, allow me to say that my letter was not written with a view to publication, but in answer to a private communication. I had no intention of denying the existence of Puerperal Apoplexy as a distinct affection, for I had not sufficient knowledge of the diseases of cows to justify me in expressing an opinion on the general question. As Mr. Wolstenholme says, the question of the pathology of milk fever is one better suited for discussion in a scientific society than in the columns of a daily paper, and if such a conference as he suggests be arranged, I will certainly do my best to attend."

Now, Gentlemen, these are the circumstances which led to our meeting here to discuss the question—Is Parturient Apoplexy in Cows analogous to Puerperal Fever in the Human Subject?

In the whole range of bovine disease, Parturient Apoplexy is about the most interesting, and the least understood; at the same time it is the most common of parturient affections and the most fatal.

Many observers have studied, and many are the opinions concerning, and the names given to it; but I think a description of the peculiarities, symptoms, and *post-mortem* appearances will better suit our purpose at present than a reference to names and theories.

Veterinary surgeons consider that the disease occurs only in the bovine species; that it appears to be peculiar to domestication; and further, that particular breeds are more frequently affected, whilst others possess an immunity. In the former category are comprised the rich and deep-milking varieties, and an example of the latter is seen in the so-called herds of wild cattle in this country, and the breed of Herefords, when not treated as ordinary dairy cows.

Another peculiarity is that primiparæ are *never* attacked, those at second calf very seldom indeed, those at third birth and upwards being the victims.

There is inability to urinate, defecate, and often the power of swallowing fails.

There is insensibility to pain, the cornea may be irritated with the finger without inducing nictation, and the most powerful irritants may be applied to the skin without creating pain. Control over the muscular system generally is lost.

There is tonic spasm of the cervical muscles, the nose being drawn round to the flank.

Again, Parturient Apoplexy usually follows easy labour, and those cases in which the least possible opportunity to septic invasion has been afforded. What I mean by this is—that if a cow calves with little effort, the foetal membranes coming away at the time, and the whole process concluded without manual help, perhaps when no one is present; such a case would be far more likely to be succeeded by the affection than one in which several persons had made uterine exploration, and in which obstetrical hemp cords were employed that had been used many times before. Add to this the forcible dragging away of the calf, and the inevitable wounding of the passage, you will admit, I am sure, that conditions the most favourable for septic invasion have been provided; yet the clinical fact remains that *very rarely indeed* does Parturient Apoplexy supervene in these cases.

Puerperal Fever in the human female, in the majority of cases, can be traced directly to septic causes.

Autogenetic—from the presence of a dead foetus, the retention of some portion of placenta or membranes, or of a decomposing blood clot. Parturient Apoplexy in the cow has not been traced to these causes.

Heterogenetic—by the direct introduction of the morbid ferment on the

hands of the accoucheur, by the use of infected linen, and by the presence of a miasmatic atmosphere.

The evidence and proof of this is overwhelming—a surgeon has made a *post-mortem* examination, after which the record of his attendance on parturient patients is plainly traced by the hand of death in characters of puerperal fever. Professors and students attend dissecting rooms, and afterwards visit the lying-in hospital, resulting in frightful mortality among the patients. Certain rooms and institutions have been observed in which almost every case of parturition taking place therein has been followed by this disease.

These facts have been observed over and over again; what evidence of the same is there in the case of Parturient Apoplexy? We ask for evidence. The veterinary surgeon has little to offer; on the contrary, we note, 1st, that cases of difficult parturition are strikingly exempt from the disease; 2nd, that whilst a surgeon may be attending cases of Parturient Apoplexy, and at the same time assisting the breed of Hereford cows to calve, yet neither does this disease nor puerperal fever supervene.

These facts are observed with respect to primiparæ also; they calve in the same shippens and byres, have a common bedding, are attended to and handled during parturition by the same persons, and assisted by the same instruments. Further, there is no evidence of the disease being carried from farm to farm by individuals, nor by mechanical means. We have nothing before us to warrant the suggestion that overcrowding, want of cleanliness, or the presence of manure heaps is the cause; and should this summary dismissal of the question of bad sanitation leave doubt in your minds, I need only ask how you can account for the marked exemptions I have indicated, if a cause so general as this is admitted?

Again, evidence is entirely wanting showing the presence of a septic poison in the flesh, for it is used for human consumption when killed before death ensues, and as food for dogs should the butcher arrive too late, or not at all.

There is no record of malignant pyæmia supervening the handling of the viscera, in the dressing of the carcase.

Some notes by Mr. A. Harrison Thomas, of Preston, which bear on the subject, appeared in THE VETERINARY JOURNAL of January last; they will serve as a centre around which we can more completely describe the symptoms, although I cannot admit that each case is typical of the uncomplicated affection.

To this, permit me to add short notes on two of my own.

Case I.—A deep-milking cow; fourth calf; parturition easy; found down the next morning; pulse 75, full; respirations 16, heavy and stertorous; conjunctivæ deeply venous congested. Head in normal position; rests on sternum; extremities warm.

At night, head drawn round to flank with tonic spasm; breathing more stertorous; bladder full, no passage of fæces—external temperature warm—internal 101° Fah. Advised that she be killed. *Post-mortem*: membranes of brain very much congested, uterus normal.

Case II.—Aged cow, dropped immediately after calving, was in this condition for three days, using catheter, purgatives, etc., bowels acted third day; was up and almost well on the fourth.

Mr. Harrison Thomas makes no reference to spasm of the cervical muscles, which is a common symptom; nor does he record the temperature, the marked rise of which is almost diagnostic in the majority of cases of Puerperal Fever and pyæmia.

On the other hand, Dr. Fleming, who also quotes a number of continental observers, states that "the temperature is not increased as a rule, on the contrary, it very often is below the normal standard." The temperature of

the cow in health is 102° Fah., *i.e.*, the human temperature, plus three; the pulse is about 60.

I would ask you to notice the suddenness of the attack; Case I. giving 33 lbs. milk on the day of calving: not unfrequently at time of seizure the udder is well filled with milk.

With respect to the *post-mortem* notes of the first case, I should consider the evidence as negative. The thickening of the omentum referred to seems of old standing, as "there was no inflammatory exudation on its surface."

In Case III. the symptoms detailed are not at all the ordinary ones of Parturient Apoplexy; "profuse sweating—much thirst—swollen vulva with sanious discharge therefrom," not being recognised as such.

Not only is the important item of temperature omitted, but not a word is said as to the presence of the lesions of peritonitis; of an inflamed and almost sloughing condition of the womb, nor as to the finding of abscesses in various parts of the body.

Case III. was of forty-eight hours' duration, and Case IV. was of ninety hours. Would you not have expected some evidence of local inflammation in this time, if death had resulted from a disease analogous to Puerperal Fever?

Again, Mr. Thomas informs us that "sixty per cent of the cases he saw in the year recovered in a day or so."

To my mind this throws a new light on the subject, for had it been Puerperal Fever, the antiseptic douche not used, and no quinine and alcohol administered, as in these cases, the percentage of recoveries would have been about one, instead of sixty per cent.

But the veterinary surgeon can lay claim to no such flattering record of recovery as sixty per cent. in the cases to which he is summoned; and the only inference I am able to draw from the statement is, that the average farmer and his servant are not sufficiently acute to detect these mild, transient cases, and so they pass unobserved, and the veterinary surgeon never hears of them.

Mr. Thomas notes the fact that an animal having recovered from one attack is especially liable to a second and fatal one. I would like to ask if this is a characteristic of Puerperal Fever in the human subject?

In summarising the foregoing points we may observe:—

Certain breeds of cattle are exempt: The disease is never seen in primiparæ: It is sudden in attack, and occurs in cases least exposed to septic invasion: There is rarely rigor: No rise in temperature: Tonic spasm of cervical muscles: Non-passage of urine and fæces: Insensibility to pain: Usually there is complete loss of intelligence: Frequently the respiration is very little accelerated: No enlargement of vulva: One attack predisposes to another: Occasionally almost instantaneous recovery: No evidence of conveyance from one farm to another: No record of poisoning on eating the flesh, or from absorption by wounds: Total abstinence of *post-mortem* lesions of metritis, peritonitis, and of pyæmic emboli.

For the sake of comparison, I will ask you to bear with me whilst I refer to two authors on Puerperal Fever.

Dr. Clement Godson defines it as:—"A *continued fever*, . . . often associated with local lesions of the uterus, vagina, or peritoneum: and caused by the absorption of septic matter, not infrequently arising from the retention of portions of placenta or membrane, or from a putrid foetus.

"*Anatomical Characters*.—These differ greatly according to the duration of the fever, and the parts of the body affected by the disease.

"In some rapidly fatal cases of a malignant type, nothing has been found but a peculiar alteration in the blood. . . . Generally however, *local lesions exist*, and if these are seen after death in the shape of

lacerations in the genital tract; they will present an unhealthy appearance, their edges being swollen and œdematous. The uterine surface is generally found intensely inflamed, softened, and occasionally in a state of slough. The results of inflammation may also be found in the veins, parenchyma of the uterus, and connective tissue around it; as well as in the lymphatics, so numerous and so large at this time, pus being frequently discovered in these vessels. The *peritoneum is nearly always affected*, it may be only congested in patches, but is generally universally so; the intestines may all be glued together; and the sac may contain more or less serum or sero-pus, with flaky-lymph; etc., etc.

"*Symptoms.*—In no disease do the symptoms vary more than in this, depending upon the violence of the fever and the localities attacked by the poison. . . . Frequently there is, first of all, great depression, with headache; sometimes the first symptom is a rigor. The pulse becomes rapid and feeble, 130 or more per minute. The temperature rises to 103° Fah. or higher. The skin is generally hot and dry. Vomiting frequently occurs early. . . . *Diarrhœa* is often very troublesome, the evacuations being horribly fœtid. . . . There is often acute pain, with tenderness and swelling of the abdomen. . . . As a rule the intellect is unimpaired. . . . The breathing is short and hurried. . . . The joints may swell and suppurate, and abscesses may form in any part of the body."

Dr. Playfair (page 355) says:—"In the great majority of cases the disease begins insidiously. . . . The first symptom which excites attention is a rise in the pulse, which may vary from 100 to 104 or more, according to the severity of the attack, and the thermometer will also show that the temperature is raised to 102°, or in bad cases even to 104°, or 106°. (In the cow the equivalent of these figures would be 105°, 107°, and 109° Fah.)

"In the more intense class of cases in which the whole system seems to be overwhelmed in the severity of the attack, the disease progresses with great rapidity, and often without any appreciable indication of local complication. . . . In the *worst form* of cases the temperature is *steadily high*, without marked remissions.

"In the second type, and that perhaps most commonly met with, the morbid changes are most frequently found in the serous membranes, in the pleura, pericardium, but *above all the peritoneum*.

"In the third type, the mucous membranes appear to bear the brunt of the disease.

"The fourth class of pathological phenomena are those which are produced chiefly by the impaction of minute infected emboli in small vessels in various parts of the body. These are the cases which most closely resemble surgical pyæmia. . . . As a rule, intelligence is unimpaired, and this may be the case, even in the worst forms of the disease, and up to the period of death. *Diarrhœa* and vomiting are of very frequent occurrence."

I think, gentlemen, that this description of Puerperal Septicæmia in the human female will almost exactly coincide with the experience of the veterinary surgeon in the same well-marked disease as we see it in cows, mares, ewes, sows, and bitches.

In the cow, we particularly note the following:—The symptoms develop more gradually than in Parturient Apoplexy: Decreasing supply of milk: Rigor: Rapid, small pulse: Hurried breathing: Colicky pains: Expulsive efforts: Tumefaction of vulva: Great rise of temperature: *Diarrhœa*: No loss of intelligence.

The *post-mortem* lesions observed are very similar to those enumerated as occurring in the human female, though personally I have never seen "the bowels glued together."

In conclusion, gentlemen, I need scarcely say that I have sought rather to introduce than to treat the subject systematically; by contrast also I have endeavoured to prove my contention, that the so-called Parturient Apoplexy of cows is not analogous to Puerperal Fever in the human female.

The PRESIDENT called upon Dr. Cullingworth to open the discussion, remarking that they must all be very pleased indeed with the fair way in which Mr. Wolstenholme had introduced the subject.

Dr. CULLINGWORTH said he should have preferred to have taken part in the discussion after hearing the experiences of some of the veterinary surgeons present. However, as he had been called upon by name he would, as briefly as possible, tell them what had occurred to him in thinking this matter over, in reading on the subject, and in listening to the paper of the evening. Let him begin by saying that Mr. Wolstenholme was perfectly correct in thinking that when he (Dr. Cullingworth) entered into the correspondence on the subject of the analogy between parturition in cattle and Puerperal Fever in the human subject, he was ignorant of Parturient Apoplexy. He had, however, made it his business since to look up the literature on the subject, and he had gathered, from what was given in the recognised text book of this country of Dr. Fleming, and the recognised text book on the subject in France by M. St. Cyr, that the disease in cattle is not analogous to the fever in the human subject. So far as the analogy was concerned, therefore, he would abandon that contention, and at once admit that there was no analogy between Puerperal Fever in women and Parturient Apoplexy in cows, so far as their symptoms and *post-mortem* appearances were concerned. Still, with an eye to preventive means of treatment, he thought something might be gained if they could discover what was the etiology of Parturient Apoplexy. Was there any analogy at all between the etiology of Puerperal Fever in women and Parturient Apoplexy in cows? Now, to this point he would confine his attention. He believed, for himself, that there was; he hoped, for the sake of their common science, and for the sake of their common art, that there was, because it was upon this analogy being the true one that they might hope to find any hopeful measures for prevention and for cure. He took it that Mr. Wolstenholme's description of Parturient Apoplexy was a generally accepted one, and he had described it as coming on with some suddenness within from twenty-four hours to three days after calving; that it ran a course sometimes of twenty-four hours, sometimes of four days, and then either the cow died or quickly recovered. Perhaps he had in this brief sketch mixed up Mr. Wolstenholme's remarks with his (the speaker's) recollection of what he had read in the works he had consulted on veterinary obstetrics, if so, he asked pardon. That, however, he thought might be taken to be the accepted opinion of those who had seen most of this very interesting and peculiar affection. The symptoms of Parturient Apoplexy were those of gradual loss of interest in the calf, loss of appetite, increasing weakness, following either with spasm of the muscles of the neck or a more complete prostration, the animal lying extended. Now, the question was—to what did these symptoms point? Were they due to a form of poisoning, or were they due to a distinct disease? The *post-mortem* appearances in Parturient Apoplexy, they would all admit, were mostly negative. As to the word "Apoplexy," of course it was an entire misnomer; there was no Apoplexy. In one or two instances there had been found a clot on the brain, but any affection from which an animal could recover in four days could not be what they understood as being Apoplexy. The word "Apoplexy" they accepted here because it was convenient, but they denied altogether that it was really Apoplexy.

The *post-mortem* appearances, as he had said, had been mainly negative. There were a few instances where certain lesions in the brain and its

membranes and serous effusions in the lateral ventricles had been recorded, but it was explained that they were not so constant as to be at all worthy to be called pathognomonic of this disorder; they were probably purely accidental phenomena when they had been discovered. There was no gross lesion that was constant in Puerperal Apoplexy; therefore, they might say it did not correspond to any known disease. It was not an inflammation of the uterus, and the lung, and the brain, assuming a particularly severe form, because of the fact of its coming soon after calving. It was not a local disease with severe general phenomena. Now, not being a local affection, what was it? Was it not most likely (reasoning again from analogy) that this was a sort of poisoning—that it was a toxic affection? He was not asking them to say it was due to septic affection; but he maintained that the symptoms and *post-mortem* appearances appointed to some blood poison as being the cause of those symptoms and *post-mortem* appearances. They were much more in accord with that than any known affection. What was the history of a case where blood-poison was introduced? When the poison had spent its force, the patient recovered from the influence of the poison, and quickly recovered. If he was right in thinking there was fair ground for supposing the influence at work here was a toxic influence, what was most likely to be that toxic influence? Well, Mr. Wolstenholme had brought forward some facts that made it difficult to maintain that this conformed with the ordinary result of septic poisoning. He had shown, for example, that, whereas in ordinary forms of septic poisoning there was a distinct rise of temperature, here the temperature was not raised, but was generally somewhat lower than formerly. He had shown, moreover, that in the cases of Parturient Fever and the case of Puerperal Fever in the human subject it was of far more frequent occurrence in cases where manual or instrumental interference had been necessary than in simple, easy, straightforward labours. These were, undoubtedly, difficulties in the way of accepting this as a form of septic poisoning, and yet he (Dr. Cullingworth) should be very loth indeed to accept the view that it was not a form of septic poisoning. How, then, were they to get over these very great difficulties? He acknowledged them to be difficulties. Might he suggest one or two considerations? He did not say they completely answered or did away with the difficulties, but they were points which were just worth bearing in mind. They had instances of blood-poisoning that were unaccompanied with a rise of temperature. No one would doubt, he supposed, that lead paralysis was a form of blood-poisoning? He was not aware that lead paralysis was accompanied with a rise of temperature. Diphtheritic paralysis was another form of paralysis which was undoubtedly due to blood-poison; but the rise of temperature which accompanied the original contact of diphtheria did not occur, so far as he knew, when the original symptoms of paralysis made their appearance. He had taken some pains to try and ascertain whether there was any case on record where pure and unmistakable septicæmia had occurred without a rise of temperature. He had, so far, not been able to lay his hands upon a record of such a case. In the records of Dr. Calk on septicæmia as it occurred in mice—a mouse being an animal extremely susceptible to septic poisoning—he had not made any record of the temperature, unfortunately but he concluded his paper by saying that no doubt records of temperature would have been interesting had they been made—which was one of those tantalising remarks that “sent one empty away.” But just let him (Dr. Cullingworth) tell them what the symptoms in mouse-septicæmia were. After the injection of a small quantity of putrid blood into mice, in about one-third of the number so treated, the animal remained healthy for twenty-four hours. Then the eye became dull and watery, the animal became languid, either moving little or sitting quite still, with back bent and limbs

drawn up. It then ceased to eat, respiration became slow, weakness increased, and death occurred without convulsions in from forty to sixty hours. On *post-mortem* examination, the internal organs—excepting spleen—were quite unaltered. After this, one-tenth of a drop of the blood of the animal that had died under these circumstances was inoculated into another mouse, and exactly the same set of symptoms occurred in exactly the same time. A large number of mice being inoculated, in not one instance did the inoculation of a very small fraction of a drop of blood from the septicæmic mouse fail to produce similar symptoms. It seemed to him these symptoms, and the absence of *post-mortem* appearances, were not extremely remote from those they found in Parturient Apoplexy. They were more akin to Parturient Fever in cattle than Puerperal Fever in women. With regard to the other difficulty of the easy labour, one must remember this—that there were two very distinct modes by which the poisoning might occur in Puerperal Septicæmia—he used that phrase because it was comprehensive—one was from septic intervention from without by the hands of the person assisting, or somehow or other by the instruments and so on; and the other was by the decompositions of portions of the membranes, or after-birth remaining within the uterus. Now, they were not entirely unacquainted with the occurrence in the human subject of cases of Puerperal Fever from the latter cause. Where labour had been easy, where there was no manual assistance, and yet where portions of the after-birth or membranes had been retained and had undergone putrefaction, then there was given off from the portions so retained a poison, probably of a chemical nature, because it ceased the moment the uterus was cleansed; which it would not do if it was due to micro-organisms in the blood. It was accompanied by the presence of bacteria undoubtedly, but there were no micro-organisms in the blood, otherwise flushing the uterus certainly would not immediately stop the symptoms. They could only rid the uterus of putrefying matter; and in these cases, which they called Septicæmia, which were due to chemical causes, after they cleansed the uterine cavity the symptoms subsided. If they did not cleanse the uterine cavity, what happened? Sometimes the patient died, sometimes the poison expended its force and the patient recovered in spite of it. Was it not possible—he merely threw out this as a suggestion—that in the cases of Parturient Apoplexy the poison—in those cases which occurred in the absence of manual or instrumental assistance—had entered in the method he had now described, owing to the unsuspected retention of portions (ever so small) of blood clots in the membrane, and the throwing off from the putrefied matter of a chemical poison? That was what he had chiefly to say about the points of analogy.

One point more. It was perfectly clear, from what Mr. Wolstenholme had said, and from what all authorities said upon the subject of Parturient Apoplexy, that it was a disease peculiar to cows. They must not, therefore, expect to drive the analogy too close—if any analogous disease at all existed in the human female. As to Puerperal Eclampsia, there was no analogy between Parturient Apoplexy and Puerperal Eclampsia in women. There was a Puerperal Eclampsia in cattle, but that was not the disease they were discussing. There were other points of difference which entirely disassociated the one from the other. There was no analogous disease to Parturient Apoplexy in the human subject, so far as he was aware.

Now, he spoke under correction, he felt he was rather getting into deep water if he began to speak of diseases of animals of which he only knew by reading, but he thought in the reading he had gone through (in consequence of his interest in this subject, commencing with the correspondence that Mr. Wolstenholme had read) he had come across a description of disease which occurred after foaling in mares. It was called Parturient Laminitis. So far

as he could gather, this was a disease absolutely peculiar to that species. Now, this disease also was very peculiar. It consisted of inflammation of the foot. He would not go into it, because it was beside the mark. It was a disease occurring on the third day after foaling, and it generally ended in recovery. It ran a definite course of a few days and its local manifestation was inflammation of the foot and tenderness on the hoof. It appeared to him that this occupied somewhat a similar position with regard to mares that Parturient Apoplexy did with regard to cows—that both were diseases special to the particular species, and both coming after parturition certainly seemed to have some definite connection with that process. He found that the authorities gave a very large number of theories of the etiology of Parturient Apoplexy. He was reminded, in looking at them, very much of the literature of Puerperal Fever, which simply bristled with theories as to its mode of origin and mode of propagation. It had been put down to a grave form of Gastric Fever, and the result of mephitic gases, from the lack of the retention of waste products owing to the suspension of the functions of the mammary glands. It had been put down to a form of Milk Fever, said to be due to the sudden removal of blood from the uterus flushing the neighbouring vessels beyond measure and producing collapse. It was said to be due to air in the veins of the brain (that was to say too little blood in the brain), hyperæmia (too much blood in the brain), and œdema of the brain—variations of derangement of the ganglionic nervous system.

Professor PENBERTHY said it afforded him very great pleasure to address the Lancashire Veterinary Medical Association for the first time, and the pleasure was enhanced by the knowledge of the fact that practitioners of both branches of medicine had met to discuss a subject which had by some—possibly by some mistake—been considered to have special relation to both branches practising in medicine. He could only be echoing their sentiments, he was sure, if he said he had listened with a great deal of pleasure to the speech of Dr. Cullingworth on this matter. He had given them a distinct line to go upon; he clearly led them to understand that he withdrew, or that he yielded to their ideas, as to the relation of Puerperal Septicæmia in the human female and Parturient Apoplexy of the bovine. This was a subject which had been especially interesting to him (the speaker), as all subjects which were not clear should be interesting to every scientific man; and they were specially indebted to Dr. Cullingworth for having impressed them with the importance of teaching the etiology of the condition; and as he had suggested, the open road for the discovery of the cause is the morbid anatomy. There were certain conditions of which they were aware which had no real definite morbid anatomy. Yet they were as certain, from their knowledge of physiology, where those conditions were primarily produced—where the inciting factor was at work—as they could be if they could see the lesions. Take that of Rabies, for instance. It had just occurred to him there were no gross lesions in rabies which gave rise to the symptoms; and as they came to the more highly developed parts of the organism so would they find a larger number of symptoms—more phenomena arising from fewer gross lesions. He had no doubt Puerperal Apoplexy was immediately brought about by something acting on the motor area as well as the organic area of the brain. Whether it be due to some special toxic matter in the blood or to other conditions it was not for him to say; but there was one thing specially worthy of consideration—why should a cow suffer from this condition? Well, it struck him in this way; the cow had been domesticated and, in domestication, had been subjected to artificial conditions, the principle of which was the production of fat and of milk. He did not think St. Cyr or Dr. Fleming gave any record of Parturient Apoplexy occurring among wild animals; he had searched other authorities and had never met with such a case. In the

domestic bovine, after the third calf, when this production of fat was at its height, they were more liable to have this Parturient Apoplexy; it was not the cow that gave thirty quarts of milk a day, but the cow that gave so many pounds of butter a day. That had been his experience, and the experience of many others. They found it not only in individual animals that were specially good butter producers, but they found it more commonly in short-horns which had been selected for this property of fat production. That was the most approximate speciality—or the speciality which was most closely related, in his mind, to the condition of Parturient Apoplexy in the cow. They had been told by Dr. Cullingworth that the term “Apoplexy” was a misnomer; and had it not been for a few recoveries, he (the speaker) did not think they could have the slightest doubt that it was Apoplexy. Apoplexy, as he understood it, did not depend upon a clot of blood. They might have a pressure of effused matters getting on the brain. There seemed to be some reason for supposing that they had, at the very least, a debility of vessels. He did not know whether it would be news to Dr. Cullingworth—it would be to some of them—but this Apoplexy (be it special or common) did occur prior to parturition. It had been his good fortune to see two cases (he might say bad fortune, for in one case the cow was his own) in which the cow, due to calve in three or four days, had an apoplectic fit, with the usual falling which they noticed in Parturient Apoplexy. His experience was that there was an absolute inability to gain their legs, and in the majority of cases consciousness was so far lost that there was an absence of desire to move, whether the power to do so was there or not. They were rather staggered by the large number of recoveries without any temporary or permanent paralysis—he must say that in the majority of cases the result was fatal; but in the minority he was perfectly open to allow that there was something to stagger them in that they did not get more long-abiding paralysis after an attack. He and a colleague had made a good many *post-mortem* examinations of the brain, having had an idea that there was some organic structural change in it, and they were almost led to the conclusion that there was a fatty degeneration of the arteries of the brain. Now, he was bound to say that he could not account for the recoveries, which were comparatively few. Against any form of septicæmia they had to put those few cases—and they were very few—which occurred prior to parturition. He believed St. Cyr and Dr. Fleming both reported cases after abortion, and in those cases the toxic theory would be more feasible than ever; but in the two cases he had mentioned the calves were borne alive in perfect health, and the occurrence was absolutely sudden—much more than, in his experience, he should expect after injection of any product of bacteria. The suddenness of the attack rather staggered him in receiving the toxic view. His mind was thoroughly open on this subject—he had no very great impression upon it. It was a condition about which they all had an individual opinion, whether it be well-formed or not.

Dr. SINCLAIR (responding to the call of the President) said he came there to learn, and with absolutely no other purpose, and he had heard a great deal: listening to the evidence as a member of a jury he must say he had come to no theory. As far as his previous knowledge went he had come to the conclusion that there was absolutely no relation between Septicæmia and Parturient Apoplexy. His experience of Puerperal Fever in the lower animals was gleaned in observing an epidemic among a flock of sheep in the South of Scotland, in the lambing season. There was considerable mortality in that season on the farm where he was staying, and he came very decidedly to the opinion that Puerperal Fever in sheep and Puerperal Fever in a woman were exactly the same disease, that they were exactly analogous. With regard to Parturient Apoplexy, he did not regard the term “Apoplexy” as such a serious misnomer. He thought the last speaker had made a mistake in not going on

and giving them more details. It seemed to him (Dr. Sinclair) if they took the facts of this disease as known only in the cow, there was one definite fact—there were certain kinds of animals exempt; they only found it in the elderly animals whose tissues were beginning to degenerate. In the course of the disease there was clearly no rise of temperature. With regard to the series of cows that Mr. Wolstenholme quoted from—those of Dr. Thomas, of Preston—it was a totally different class of disease. They were usually guided by the evidence, and unless gentlemen would make exact observation, then they were very liable to mix up two kinds of cases. He thought those cases in which there was a rise of temperature and a quick feeble pulse, and all the rest of it, were probably cases of acute bacterial disease. The fact that it was only found in elderly cows, in animals in which they would expect to find degeneration of the tissues occurring at the time at which there was a sudden change in the blood pressure—for he should disregard the case of a change occurring ten days after labour)—taking these facts, they were driven to the conclusion that Parturient Apoplexy was a disease somewhat similar to (?) epilepsy. They had it in the convulsions occurring to the drunkard in a state of chronic alcoholism, or in the convulsion that occurred after certain poisons. Of course, he merely gave an opinion, but he would like to say a word or two to justify the position of antagonism he appeared to take up to his friend Dr. Cullingworth.

First of all, Dr. Cullingworth appeared to be desirous of proving that this was a septic disease. He thought that was a most dangerous attitude for a scientific man to get into. Dr. Cullingworth would admit, of course, that the proof was not sufficient; and if they went on the wrong tack and sought to prove that the disease was owing to a certain cause, it was a positive hindrance to getting at the true cause. There was one thing certain about all septic diseases—that a rise of temperature was an absolutely constant phenomenon, and to mention those cases where they had Puerperal Peritonitis with low temperature was positively introducing—not irrelevant evidence, but false evidence.

Dr. CULLINGWORTH,—I withdraw that unmistakably to-night. That was written in a letter, but I withdraw it, because I wrote it in ignorance of the condition known as Parturient Apoplexy.

Dr. SINCLAIR said the point he wished to make clear was this—that in all septic disease, either Puerperal Fever or whatever name they might call it by, there was always a rise of temperature, and when it was said that Puerperal Peritonitis existed without a rise of temperature, it was mistaken evidence, because it simply meant that the exact observations had not been made in sufficient time. They knew perfectly well there must be found a rise of temperature in the early stage of the affection. They knew that the lowering of the temperature was one of the most ominous signs they could find in cases of poisoning.

With reference to the proof of a septic origin, it seemed to him—going back to Dr. Cullingworth's remarks on the analogy of such things as lead poisoning—that was a chemical poisoning, and they were not speaking of the same things when they spoke of animal poisons of bacterial origin. He must say from his previous observations of Puerperal Fever of the lower animals, and of the facts of the cases of Parturient Apoplexy, he was clearly of opinion that Parturient Apoplexy was a totally different disease; and the way to clear it up, to make absolutely certain of the nature of the disease, must be by means of careful observation of the morbid anatomy, and by a careful analysis of all the products that could be obtained both before and after the parturition of the cow.

Mr. W. ALSTON EDGAR, F.R.C.V.S., said they might sincerely congratulate themselves on the turn which this discussion had taken. Their pro-

fession as veterinary surgeons brought them into contact with the great stock-owners of the country, and when they saw the medical profession apparently in conflict with their own, it was deeply to be regretted. They were all glad at the generous and frank withdrawal by Dr. Cullingworth from the position he had taken up in opposition to Mr. Wolstenholme. It might also be hoped, in the interest of stock-owners, that Dr. Thomas would be equally willing to make a candid retraction from the conclusion he had published in his paper in the January number of *THE VETERINARY JOURNAL*, as it was exceedingly unfortunate to find a gentleman of Dr. Thomas's high scientific attainments at issue in veterinary literature with nine-tenths of the profession to-day. So far as the discussion as to analogy of Parturient Apoplexy in the cow and Puerperal Fever in women were concerned, it was practically at an end. They all admitted these were two distinct diseases, and they were now drifting into a discussion that might occupy them a week, or a year. Dr. Cullingworth had pointed out to them the vast amount of conflicting theory that existed in their text books as to the cause of Parturient Apoplexy. He (Mr. Edgar) desired to speak clinically only upon this division of the subject, and he was free to admit, after having seen over five hundred cases of Parturient Apoplexy during the last fifteen years, that he was just as much in the dark with regard to its anatomical etiology as he was when he commenced practice; but he could claim a most definite knowledge of causes and conditions leading up to the actual development of the disease.

Those who had had practical experience were prepared to say that there were certain causes and conditions that would operate to a certainty in the production and development of the malady. Its clinical history and successful preventive measures were entirely opposed to any theory of organic or chemical poison as suggested by Dr. Cullingworth in his remarks upon lead poisoning and mouse septicæmia. The primary causes centered around the animals' breed, age, milking qualities, and plethoric condition, with loaded viscera (rumen, etc.) as the time of parturition. He believed the profession was almost unanimous in regarding Parturient Apoplexy as a preventible disease if proper dietetic and medicinal treatment were instituted. In successful preventive treatment, antiseptic precautions played no part whatever. Professor Penberthy had drawn attention to fatty degeneration. He thought they should be clear in distinguishing between the function of fat separation in milk secretion, and storing up of fat in the tissues. For example, some of our most improved shorthorns were very bad milkers, and might be excessively plethoric at parturition, yet they possessed a remarkable—almost complete—immunity from Parturient Apoplexy. Heavy milkers, on the other hand, were immensely pre-disposed to the disease. It had been a terrible scourge to him, he had been driven from one theory to another, he had sought in vain comfort from the text books. As practical men they did not want a theory that would not hold good with one cow equally with another. He was glad that the theory of blood-poisoning, in any form whatever, had received a strong negative at that meeting. All of them were familiar with lead poisoning in cattle, and they drew a distinct line between mechanical and organic poisons. Dr. Sinclair had alluded to Epilepsy. Cows suffered from a form of Epilepsy entirely distinguished from Parturient Apoplexy.

As he had said, he looked upon the malady as a preventable one, provided they were allowed to adopt preventive treatment. He would give an example, which had come under his personal observation. From July to Christmas three cows belonging to the same owner calved, and each one went down with Parturient Apoplexy. One animal lay insensible about thirty hours, and after having had paralysis of one leg three weeks, it recovered; the other two had complete coma, and were killed in that stage of the disease. The owner became frightened for three other cows he had. Pre-

ventive treatment was suggested, and was agreed to. These cows were treated dietetically and medicinally, and they had since calved successfully. Such cases as this were, to the stock-owners, tangible evidence that the disease was not contagious.

A special point had been made of the temperature in this disease. He might be allowed to mention that in a series of experiments he had made upon parturient cows, he had found that normally the temperature commenced to fall a few hours before calving, and was at its lowest point (one to two degrees fall) about thirty hours after parturition, which it would be remembered was a critical time for the onset of Parturient Apoplexy.

Dr. THOMAS (also in response to the call of the President) said, in the first place he would explain why he wrote the paper in THE VETERINARY JOURNAL. At the institution to which he was one of the medical officers they had a large number of dairy cows, and they had considerable mortality from a certain disease which the veterinary surgeon in attendance on the cows proclaimed to be Milk Fever. He (Dr. Thomas) naturally took some interest in the case, as it seemed to present special sort of symptoms that were similar in all those cases. He read up the literature as far as he was able to get the books on the subject, and he saw so many theories mentioned as being the cause, and so many theories with regard to the nature of the disease, that he concluded that it was not at all settled in the minds of practitioners as to what it really was. He thereupon looked into the subject of the bacteriology of it, and he could not find that there had been any records published. He, however, examined the organs himself, and he found those germs or bacteria present in every case. That circumstance led him to write the paper, thinking if any one else had seen similar organisms it might induce them either to agree with what he had found, or simply to say they had not found them. Mr. Edgar had said he hoped that he (Dr. Thomas) would retract his views with regard to the disease being a form of septicæmia. The discussion before the meeting was mostly as to whether this disease had any analogy to Puerperal Fever; but that was not the subject exactly that he went into in his paper. There was no doubt that among cows there was something special—whether it was that the constitution of the cow was different from that of the human being, or whether it was a special disease, he would not offer an opinion. In these cases that came under his notice, they were all old cows, and their symptoms quite agreed with what was mentioned in the text books on the subject. He gathered from what Mr. Wolstenholme had said that he was rather disinclined to think those cases were not Parturient Apoplexy. So that it might be that he (Dr. Thomas) had been investigating a totally different disease, and he came here in the hope really of hearing further opinions of the symptoms so that he might consider whether these were cases of Parturient Apoplexy or not. There was one omission in his case, and that was to record the temperature; he did not take it at all, and the reason was that he only looked at the cases casually, except at the *post-mortem* examinations, because he had not the remotest intention of publishing anything. He took rough notes of what he saw when he examined the cows, and from the symptoms he concluded there must be something of a toxic nature to have such a sudden effect. One fact that had been mentioned with regard to subsequent paralysis was another point that was in favour of that theory. Why should there be subsequent paralysis of anything unless it was subsequent apoplexy? But there was no clot in the brain structure to be found in any one of the cows. As it was only gross lesions of the brain, he imagined, that could constitute real apoplexy, he thought the term Puerperal Apoplexy certainly did not fit the cases. He could not add anything further to the cases he had recorded. He had not seen any since the cases stopped. He looked upon the outbreak as

an epidemic that came suddenly and it ceased, although a cow was calving almost daily.

Replying to a question by a member, as to whether the veterinary surgeon who attended these cows gave any instructions as to an alteration of their treatment and diet, Dr. Thomas said they were all strictly under the veterinary surgeon's control, and there had been dietetic treatment. The chief authorities of the institution had given strict orders that the cows should be kept on low diet for a fortnight beforehand; and they had what the veterinary surgeon sent in to the cowman—a cleansing drink, he termed it—a drink to be given before calving, and all these cows had one. One cow that had this particular affection a year ago he noted specially, because the cowman was very particular to give this drink to this case, and he (Dr. Thomas) was watching the effect. But it did not seem to have any effect at all, as the cow died.

Dr. WILD said he had listened with the greatest pleasure to the discussion. He was pleased to be amongst them, because he felt keenly, as a pathologist, that they needed the aid of veterinary surgeons on many important points in human pathology on account of the greater opportunities of *post-mortem* examination that were open to them, and the means they had of conducting experiments on the lower animals which they had not in the branch of the profession to which he belonged. From Mr. Wolstenholme's paper, and the remarks of various speakers, it seemed clear that the terms "Milk Fever" and "Parturient Apoplexy" included more than one class of cases. First, there were those accompanied by a rise in temperature, almost certainly of septic origin and corresponding to puerperal fever in the human female, and also found after parturition in all domestic animals. Secondly, there was a group of cases to which alone the term "Parturient Apoplexy" was strictly applicable, occurring only in cows; characterised by a fall in temperature, coma of more or less sudden onset, anæsthesia, and sometimes local paralysis; the symptoms either terminating in early death, or gradually passing off. The interesting fact that these cases only occurred in cows, and rarely before the third calf, led them to inquire in what respect a cow at that period differed from other domestic animals. The most striking difference undoubtedly was the enormous increase of the milk-producing capacity of the cow—a capacity which was increased in every way by selective breeding and artificial feeding until the amount of milk produced was out of all proportion to the amount produced by other domestic animals. It was also a significant fact that the cows which produced the most milk were also those which were most frequently attacked by Parturient Apoplexy. Could they find any explanation of the pathology of the disease in this increased capacity for the production of milk—that is, an albuminous fluid containing large numbers of fat globules? To turn for a moment to human pathology; they found that in some cases of Diabetes the blood contained fat globules. Many cases of Diabetes terminated by coma, resembling in its sudden onset and other characters the Parturient Apoplexy of the cow. In some of these cases fat emboli had been found blocking up the small vessels of the medulla and other parts of the brain. Was it not possible that a similar condition of fat embolism might be the cause of Parturient Apoplexy? The excessive production of fat globules in the milk would afford a source from which fat globules might, under certain conditions, pass into the blood, and being carried by the circulation into the brain might block up the small arteries or capillaries and so produce coma. If the fat globules were re-absorbed, recovery would take place; thus affording an explanation of those cases of recovery which were difficult to account for on any theory of the disease assuming serious organic changes of the tissues. He did not claim any value for this theory, but simply suggested its possibility as a guide for future researches.

A gentleman said he was the "A.B." who gave rise to the correspondence on this subject. He had heard it said that a heifer did not have what was commonly called Milk Fever. He met a gentleman last year at Lord Egerton's sale, in Cheshire, who said his cows had suffered a lot from Milk Fever, and that a heifer of three-and-a-half years' growth had been seized with it, and had died. Three cows that he (the speaker) lost last September were all treated scantily to food, were all assisted by himself to calve, and each of them was seized with Parturient Apoplexy, and died. One cow calved in the open field, and that one went on all right, and lived. He had calved six cows this month, and on the strength of Dr. Cullingworth's advice to him with regard to their treatment, he had felt the greatest assurance. He had fed them in the ordinary way, taking no notice of the quantity, but seeing that they were healthy, and that their bowels were right. In every case they had done well. He had a cow that had calved that morning—a cow nine years old—which gave a dozen quarts of milk a day.

Mr. HOPKINS: This meeting marks a red-letter day in the history of our Association, when the two branches of the medical profession are united to discuss the pathology of Parturient Apoplexy. But there are subjects of far greater importance—Tuberculosis, Rabies, Scarlatina, etc., which should be thrashed out in this way. In regard to the views advanced by Professor Penberthy, as to the part fat and fat producing plays in the etiology and pathology of Parturient Apoplexy, old practitioners will bear me out in stating that this disease does occur in poor cows; and in such cases the animal is almost certain to die. The longer the period elapsing after the act of parturition before development of the disease, the greater the chance of recovery. Many cases recover from the brain symptoms and regain consciousness, but paralysis of hind extremities continues, and although the animal may be eating and drinking, and apparently in good health, it has to be destroyed on account of this paralysis. Milk Fever is confined to districts, depending in great measure upon the treatment to which cattle are subject. It is rarely met with in the cheese-producing district, much oftener in dairy and butter-making districts. With proper diet and exercise, it is a preventible disease. These facts are not consistent with septic origin. In one dairy I know predisposed cows are bled before calving, and it is regarded as a certain prevention.

The PRESIDENT said he had been requested to ask if any one had seen a case of Milk-Fever before parturition?

Mr. EDGAR, in reply, said that in a very extensive experience of the disease he had seen one case *in primipera*, occurring after the third day, and three or four cases before parturition. He had seen one calf delivered while the cow was insensible, and it never recovered.

Mr. KIDD said he had had very large experience of this disease, and he had never once seen or heard of a cure where Parturient Apoplexy had attacked the cow within twelve hours after calving. After twenty-four hours there was a chance of recovery, after thirty-six hours there was a good chance, and after forty-eight hours there was nearly a surety of getting better. Parturient Septicæmia, which he considered analogous to Parturient Fever in the human female, was, he believed, due to blood poisoning, and was infectious. Parturient Apoplexy, in his opinion, was not due to that; the *post-mortem* appearances being almost negative, *i.e.*, the uterus presented no abnormal appearance. The only appearance was in the brain, and what that was due to he was not prepared to say.

Prof. PENBERTHY said this fatty degeneration theory was one theory of his to account for the whole of the conditions that occurred here; but what he had heard that night went further to prove it than any opinion he had had before. He had been with parturient animals all his life, having had nearly

a thousand of his own, and had seen large numbers of cases of Parturient Apoplexy, and Mr. Hopkins had added to his (the speaker's) information materially by giving his experience of paralysis. He had frequently seen paralysis, but not so commonly as Mr. Hopkins had done. This all pointed to some organic disturbance in the brain. He had made many sections of the brain and stained them, and in these cases the darkening of the sections had been much more marked than in ordinary brains.

Dr. CULLINGWORTH said it would be helpful in elucidating the etiology of this affection if sound investigations could be made of the blood of animals dying from Parturient Apoplexy, specially from the bacteriologic point of view. In that way one might get positive or negative evidence, and so, possibly, set the matter at rest. He had the authority of Dr. Wild (who was assistant pathological lecturer at Owen's College) to say that he would assist any one in such an investigation if they would send him a small quantity of blood (from any case that might come under their observation) carefully packed between two glass slides. He would make microscopic investigations of the blood, and try and ascertain whether there was any information to be got in that way.

Mr. WOLSTENHOLME said that Dr. Wild would also be pleased to examine the medulla for fat emboli. He had very little to add to what he had said in his paper. He would like to ask Dr. Cullingworth a question. Did he consider Puerperal Eclampsia in the human female due to septic poisoning?

Dr. CULLINGWORTH: No.

Mr. WOLSTENHOLME: To a chemical poison?

Dr. CULLINGWORTH: Yes.

Mr. WOLSTENHOLME said he was perfectly satisfied—indeed, it was admitted—that there was no analogy between the two diseases. The absence of the disease in *primiperae* precluded the idea that it was due to septic poison. It was possible they might have a poison something analogous to that which in human females produced coma, convulsions and death in diabetes, and several other things—such as the organic poisons, which were formed in certain states of the body—subtle alkaloid poisons.

Votes of thanks were afterwards passed to Mr. Wolstenholme for his paper, and to Dr. Cullingworth and the other visitors for the interest they had taken in the discussion.

Dr. CULLINGWORTH, in acknowledging the vote, said he quite agreed with those speakers who had alluded to the great desirability of both branches of medical practitioners meeting more frequently. He did think that great benefit might arise from so doing in the elucidation of many other pathological problems, besides the ticklish one they had been discussing.

A vote of thanks to the President closed the proceedings.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE spring quarterly meeting of this Society was held at the Queen's Hotel, Leeds, on May 3rd.

The President, Mr. W. Lodge, occupied the chair, and the members present were Messrs. G. Carter, Keighley; H. Snarry, York; A. W. Mason, Leeds; J. M. Axe, Doncaster; Anderton, Skipton; Anderton, Halifax; McCormack, Leeds; B. Smith, Barnsley; A. W. Briggs, Halifax; T. Fletcher, Sheffield; M. Robinson, A. E. Hanson, H. Pollard, and Joe Clarkson; J. Scriven, Hon. Treasurer, Tadcaster; and W. F. Greenhalgh, Hon. Secretary, Leeds. Mr. Chas. Phillips, A.V.D., was present as a visitor.

The HON. SECRETARY read letters of apology for non-attendance from Professors Axe and Williams, Mr. Greaves, Manchester; Mr. P. Deighton, York; Mr. Pickering, York; and F. Danby, Bainton.

Mr. Longhurst, Port Inspector of Hull, and Mr. Gavin Scott, of Scarborough, were nominated for election as members.

A discussion took place on the inaugural address of the President, delivered at the last meeting.

Mr. CARTER said he listened with considerable pleasure to the address, which contained many points of great interest to the profession. He noticed that their President was a warm advocate for the establishment of a uniform charge for the examination of a horse as to soundness. That question had been a bone of contention for a considerable time in that Association, and it had cropped up in other Associations. While sympathising with the idea of the President, he could not say he appreciated altogether his opinion. As long as veterinary surgeons continued to practise, so long would many clients continue to follow the opinion of the man they had known for some years, in preference to the opinion of a younger unknown man. If a young member of the profession got half a guinea for an examination he thought he could not grumble. Some clients absolutely refused to pay a guinea. Well, they must suit their clients. It was so in the medical profession and all businesses, and it would be no use passing an arbitrary rule fixing the charge for examinations. It was a question best left to the practitioner himself. Alluding to the question of the examination of cow-sheds, he said he was sorry the duty of carrying out the Act had been placed in the hands of those who were incompetent. It rested with veterinary surgeons to impress upon the authorities that it was a duty which should be delegated to them. The President had said that where the disease of Tuberculosis reached a certain stage in a cow he would condemn the meat of such an animal. The difficulty he (Mr. Carter) saw was to say when the disease had extended to such a stage that the meat would not be fit for human consumption. At any rate it was a question which ought to be decided by a qualified veterinary surgeon only. With respect to milk from tubercular animals, he believed it was dangerous to health to use it, but where no tubercles existed in the mammary gland he did not think that milk from such animals should be rejected. He agreed with what the President said with regard to the question of hereditary unsoundness.

Mr. BRIGGS heartily agreed with Mr. Carter in his remarks on the question of the inspection of meat. At the same time Tubercular Disease was not fully understood. They had been studying it during the last few years, but it was not fully developed yet. It had only reached the half-way house, but they would live to see the day when they did fully understand it. He was glad to see that a measure was before the legislature with regard to the sale of horse-flesh as human food. It was an important matter. We sent from England to Germany horses alive and dead, and they were made up into various savoury compounds which the people of this country were foolish enough to eat. It was important and desirable that societies such as theirs should bring before the notice of the various local authorities the question of the employment of empirics as inspectors of meat. They, as an Association, had certain objects to carry out, and he thought they might form a committee and draw up certain recommendations to the various local authorities, having in their employ inspectors of meat, showing why those men should not occupy their positions, and showing why they, as veterinary surgeons, considered themselves entitled to be appointed to such positions. The President's paper throughout contained a great deal of good sound advice.

Mr. FLETCHER, referring to the question of Tuberculosis, said Mr. Carter had laid it down that he would not condemn an animal for milking purposes unless the mammary glands were affected. That brought to his mind several cases that had occurred in his practice where the animals had been

affected with tubercle without the mammary glands being affected, and pigs who had had the milk from cows in such a condition had suffered badly. In his readings as to what medical men considered on the subject he found it almost universally laid down that milk from tubercular cows should not be used for food, as it was injurious to children. He believed it had been stated that cases of Consumption had been traced to the consumption of milk from tubercular cows. There was no doubt many an animal that had tubercles about it at the time of being killed was used for food. He did not think they had reached the point where it affected the meat when tubercles were in the system. It was a point they ought to pay rather more attention to. Tubercular Disease might be well developed, and yet the meat surrounding it appeared healthy. With regard to the question of uniformity of charge for examination, he agreed with Mr. Carter. They could not lay down a hard and fast rule for charges. For instance, a tradesman wished one of them to look over a horse and say whether he was likely to be useful and suitable for his requirements, without going thoroughly into an examination, and such a man would never pay a guinea. It was a matter which would have to be left to individual members, although they should stick to the guinea wherever it was possible. With regard to the inspection of meat, there could be no doubt it ought to be in the hands of veterinary surgeons. They saw as much healthy meat as most people, and they saw more diseased meat than any one else. By laying their case before the various local authorities he thought they would be going a step in the right direction.

Mr. MASON agreed with what had been said as to meat inspections. They were, however, difficult cases. He remembered a case in Leeds which cost a lot of money, in which two physicians described the lungs of an animal as being "stinking and disgusting," whilst two others said the meat was fit for food, and they would eat it. Where were they to draw the line? What carcasses were they to pass? He believed they had more to learn with regard to this disease of Tuberculosis.

Mr. SMITH did not agree that the meat of tubercular affected animals was unfit for food, unless it was in the last stage and the flesh was flabby. His impression was that cooking destroyed what might be injurious to the system in many cases. He had seen a great many cases in which the milk from cows suffering from Tuberculosis had been given to pigs, and he had never seen an injurious result arising from it. If the milk was boiled he did not think there was the slightest danger in using it.

Mr. FLETCHER said Tubercular Disease was perhaps like some other diseases; if it got into a strong, healthy system the system overcame the power of the disease, but if it got into a feeble system the effect might be powerful. He thought, however, they were not sufficiently enlightened on the subject.

The PRESIDENT, in reply to the discussion, maintained that a guinea was little enough for an examination, and that they ought to uphold their profession by charging nothing less. When they considered the time an examination took, the care they had to exercise, the trouble they were put to, and the fact that they rendered themselves liable to be sued by any client if by any misfortune they made a mistake, he thought a guinea was little enough to charge. He had been asked to do it for less, but if the man was a poor man he did it for nothing. The registering of cow-sheds was certainly compulsory by law, but it was done in a loose manner, and it was time steps were taken to have the Act properly enforced. With regard to Tubercular Disease, where the carcase was in good condition and all the appearances were healthy he certainly should not condemn it, but where the beast was emaciated he should condemn it for food and milking purposes. He agreed

with Mr. Briggs that it was desirable a committee should be formed to draw up certain representations to the various local authorities on the subject of meat inspection.

Mr. BRIGGS moved "That a committee be appointed to report to the next quarterly meeting upon the subject of the appointment of empirics as inspectors of meat, and also as to the registration and sanitary arrangement of cow-sheds, with a view of some representation being made to the various local authorities."

The PRESIDENT seconded this, and it was carried unanimously.

The committee elected consists of the President, and Messrs. Carter, Briggs, Mason, Axe, Greenhalgh, and Scriven.

Mr. MASON here read a paper on "Shoeing and Machine-made Shoes," and added:—

In conclusion, I may say that I wrote to the makers of the nailless shoe, telling them I was reading a paper on the subject of shoeing before this Association, and was wishful to bring a shoe before the meeting. They replied that they had no models, and I asked them to send a shoe and I would make my own models, but they replied they preferred to make their own models.

I was reading in the *Field* the other day the following statement, made by a distinguished member of the profession: "Nails might be driven so as to take a wide hold, coming out of the wall in such a way that at each fresh shoeing old nail-holes might be obliterated." I should like the opinion of this meeting on that.

(Mr. Mason at various points in his paper submitted models and specimens of the different shoes referred to.)

The PRESIDENT said they had all listened with pleasure and gratification to the able paper of Mr. Mason. He agreed with what that gentleman had said with regard to the use of the knife. It was necessary in some cases, but there was no excuse for the abuse as practised by some blacksmiths. He was in favour of machine-made shoes, but thought they would be better if they fitted the hoof more accurately.

In answer to Mr. ANDERTON (Skipton), Mr. MASON said the machine-made shoes he had exhibited were made by the Horse-Shoe and Nail Company, of London.

Mr. MASON said the three-quarter bar shoe he had devised to suit a horse that could not travel in any other description, and the shoe could also be sharpened when necessary.

Mr. McCORMACK asked if Mr. Mason had tried Lacombe's shoes for cutting.

Mr. MASON replied that he had tried them with this particular horse, and found they were not so good as the three-quarter bar, which he had also found useful in other cases.

Mr. PHILLIPS (Veterinary Department, 13th Hussars) said he had listened with great pleasure to Mr. Mason's very able paper. Horse-shoeing was very important, indeed, as a question to be studied by veterinary surgeons, as it was a cause of such frequent lameness, arising from that necessary evil the introduction of nails. Whenever his thoughts dwelt upon horse-shoeing, he wondered why there had been no method or invention brought forward to protect the horse's foot from wear and tear, and that they still retained the old method of driving in nails, and thus breaking the horse's foot. The method of the ancients was the method of to-day. They saw marvellous inventions and improvements on every hand, but as yet nothing seemed to have been done with regard to the protection of the horse's foot. In fact, they had made it worse for the horse by substituting stone roads for macadam. He had read an article regarding the nailless horse-shoe, but he felt at once it would be useless, at any rate, for the class of horses he had to deal with—

hunters and animals in the service. He could not see how the shoe was to hold on when an animal was galloping over a ploughed field, or when a draught horse was putting out an effort. There was an opening for some one with an inventive mind to devise some method of protecting horses' feet, and if it was successful there was a large fortune to be made. Dr. Fleming had been most energetic in his attention to the subject of machine-made shoes. He (Dr. Fleming) was struck with the unserviceable condition of the army in the field for the want of shoeing, as it actually impeded the movements of an army. It was then the practice to take into the field large forge waggons, and work up the iron on the field; but the conclusion was arrived at that this was a bad method, and Dr. Fleming devised the present machine-made shoe, and brought it into use for the service. Three-fourths of the cavalry were shod with the machine-made shoes, and the other fourth with hot shoes made by the farriers out of old iron. It was found by experience that there was very little trouble in fitting the horses, and that the shoes did not, as a rule, require much altering. The smiths were bound to bend the shoes at the toe or heel cold, so that in the field they could easily bend them over any hard substance, such as a stone. Cold fitting was, of course, not so good as hot fitting, but for all practical purposes he found that the animals worked well in the shoes. The only drawback, he thought, was that the material was not quite good enough, and that the shoe was not quite strong enough at the toe. Cold shoeing in the service was superior in every way to the old system.

The PRESIDENT asked how long the machine-made shoe lasted in an ordinary way.

Mr. PHILLIPS said in the station, with ordinary work, the shoes on an average lasted a month, and when covering between eighteen to twenty miles a day on the line of march they lasted between a fortnight and three weeks.

The PRESIDENT: How long does the ordinary shoe last?

Mr. PHILLIPS: It was the practice in the service before the introduction of the machine-made shoe to put on heavier shoes with the view of making them last a month, but they did not do so, however.

Mr. ANDERTON (Skipton) said for the last two years he had used machine-made, Bessemer steel-ribbed shoes, and had found them very good. They were easily sharpened, and lasted well.

Mr. MASON said he had used steel shoes, but they would not do for Leeds, on account of the condition of the streets. Horses slipped in them on the stones as though they were on ice.

Mr. GREENHALGH believed machine-made shoes were all right for use in the army, but for ordinary wear on paved roads he thought they were a mistake. He proposed a vote of thanks to Mr. Mason for his admirable paper.

Mr. FLETCHER remarked that no doubt they had done their best to break the horse's foot by the use of nails, but the man was not born yet who had brought forward any better system. He seconded the proposition.

Mr. ANDERTON (Halifax) described a shoe used by the London Omnibus Company fitted with an arrangement of springs to minimise the concussion.

Mr. CARTER said he had seen the shoe referred to, but it was no use on country roads, because the springs got bound up with clay.

The resolution was carried unanimously.

Mr. MASON, in reply, remarked that some of the points he had made in his paper he did not believe in himself. He merely wrote them down to cause discussion.

On the motion of Mr. Axe, a vote of thanks was accorded to the President, and the proceedings terminated.

W. F. GREENHALGH, *Hon. Sec.*

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

THE annual meeting was held at the Bush Hotel, Carlisle, on the 29th March, 1889. Present—Mr. J. Donald, F.R.C.V.S. (President), in the chair; Messrs. Greaves, Manchester; Faulkner, Manchester; Campbell, Kirkcudbright; McIntosh, Dumfries; Carlisle, Carlisle; Howe, Keswick; Little, Abbeytown; Tallentire, Skelton; Chalmers, Annan; Bell, Sen., Carlisle; Jno. Armstrong, Penrith (Secretary); and others.

After the usual routine business, the Secretary, in accordance with notice given, proposed the election of Mr. Tait, of Annan, to be a member. Mr. Donald seconded, and motion carried.

Mr. ARMSTRONG gave notice that at the next meeting he would move that a new book of rules be printed. The present book does not contain all the rules, whilst some of the rules have been altered; for instance, the rules as to loan of instruments and others and Rule 16 are not included, and Rule 14 is now struck out.

The PRESIDENT then read his inaugural address.

GENTLEMEN,—In the first place allow me to express my thanks to you for the honour that you have unanimously conferred upon me. It is with feelings of trepidation that I venture to assume the dignified position of President of this Society, and had I consulted my own personal feelings I should have sought to induce some older and more worthy member to fill this position. It is usual for the President elect of the year to inaugurate the proceedings by an address. While I do not propose to depart from this established custom, I shall not attempt one of those classic orations which are the fashion, but content myself by making a few remarks upon what I may call every day-matters. If we glance back to five years ago, when this Society was first established, I think we cannot help feeling that it has been a power for good. Many very important matters have from time to time been brought forward and dealt with, and I think every member will feel that he has obtained some useful information from the discussions. In the future I think we might with advantage consider and arrange many matters that affect us socially. One thing which I have often thought might be agreed upon is a scale of professional fees. There is the greatest disparity in the charges made by different members of the profession, and I think it is a short-sighted and ruinous policy for men to charge very low fees to obtain a large practice. I am amongst those who would uphold a fair, reasonable remuneration, and I think a veterinary surgeon should at least be able to command as much for mileage as he would be charged for a hired hack from any ordinary posting establishment. It will be known to most of you that there are veterinary surgeons who will drive their own carriage and horse at all hours of night or day, in all sorts and kinds of weather, for half the fee that would be charged him for the distance by a job-master. This only leads to a ruinous competition, because it is not the nature of an Englishman to submit to such competition without retaliation; and we should remember that one man can afford to charge as little as his brother professional, and rather than see his clients leaving him will usually enter into competition on the reduced scale. I seriously think we might do something in this direction, and agree upon a scale of fees which, if carried out honestly, would benefit all parties. I maintain that these low fees are a great mistake, which, I am afraid, is greatly due to want of confidence in ourselves. Why should we keep ourselves in poverty for the sake of doing our neighbour out of a client? I am sure the public will think none the worse of us for claiming reasonable remuneration for our services; in fact, I feel it would raise us in their estimation. Professional men should carefully avoid a practice which I fear is too common, of commenting adversely upon the practice of their

brethren—a most reprehensible act, especially on cases which the critic has never seen. I should like to make a remark upon the conduct of consultants. When practitioners meet in consultation great care and circumspection should be observed, so as not to throw any slight or discredit upon the regular attendant. The consultant has a decided advantage over the regular attendant, and he should be extremely careful not to so exercise it to his own advantage. There is one point in this connection I will mention, and that is that some experienced practitioners are apt (perhaps unconsciously) to air their superiority of intelligence, knowledge, and experience, in a way that may unfavourably impress the client against his regular attendant. All matters in a consultation should be privately discussed by the surgeons engaged therein; and in communicating the result of their deliberations to the client the use of the first person singular should be avoided, and the first person plural only be employed. Were a little more care and circumspection used, I feel that consultations would be more frequent and satisfactory than now obtains. We are on the eve of another election of our representatives on the Council, and I would remark that we should carefully weigh the qualifications of each candidate before recording the vote. I am of opinion that the rural and general practitioner is not sufficiently represented on the Council, and I deplore the fact that the profession is limited in its choice of a candidate to the Fellows. I would rejoice to see a repeal of that enactment whereby the profession is debarred a more liberal and extended choice of representatives. I believe that many excellent men are thus debarred offering their services on the Council, and I still hold to the belief that the limitation of the 9th clause is detrimental to the best interests of the profession. I disagree with the dual post of Councilman and Examiner; and I regard the matriculation examination as little short of a sham, and a disgrace to the profession. Fuller reports of the Council's proceedings would be a great advantage to country practitioners, and by another year or so, if the *Veterinary Record* continues to furnish us with reports similar to those which have already appeared, we shall be better able to estimate the value of our representatives, and to know how to act when election times come round. There are many other matters connected with veterinary politics that might be discussed, but I do not think the Society should bind itself, but discuss the qualifications of the various candidates, and then leave each elector free to vote for the man or men who may seem most likely to represent his views in the Council-chamber. We should urge our claims to public recognition on all matters of animal sanitation and hygiene affecting the public health. I claim that the Dairy and Cow Sheds Order should be under veterinary supervision; and in all matters concerning the communicability of animal diseases to man the veterinary profession should take its proper stand with the practitioners of human medicine. Who is so fit as the veterinary surgeon to pronounce upon the quality of our meat supply? I think it is high time that some restrictions should be placed upon the traffic in diseased meat. It is positively revolting to know the class of meat that is dressed and sold for human food. In my district it is a very rare thing indeed for an animal to be buried, no matter how it may have been drugged and doctored. I have known animals that have died and stiffened dressed and sold for food. I have also known animals that suffered from Anthrax, Septicæmia, Pulmonary Gangrene, and diseases in the most advanced stage dressed and sold for food, and that against the advice of the veterinary attendant. We, as a profession, should do our duty towards the public in this matter. I will not weary you further, gentlemen, but in conclusion ask the members, by their regular attendance, contributions, taking part in the discussions, and orderly conduct, to lend me their assistance to successfully conduct the business of this Society during the present year.

At the conclusion of the paper, which was received with applause, the PRESIDENT said, We have now to consider the next election of Councillors for the Royal College of Veterinary Surgeons.

Mr. GREAVES asked if this Association had on former occasions selected a representative.

Mr. DONALD: We joined on one occasion with the North of England Veterinary Medical Society to support Mr. Mulvey and Mr. Elphick. Mr. Campbell's name was then brought before us, but it was objected to by some of the members on account of his being a Fellow.

Mr. MCINTOSH: It was our intention then to support Mr. Elphick, so as to test the question whether or not we could force a member instead of a Fellow on the Board; and on that occasion I was one of those who objected to Mr. Campbell on principle, on the one ground that he was a Fellow. I read a paper either then or immediately after on the subject, and said all I could on the matter. I could not see why those of us who had complied with the requirements to become veterinary surgeons should be precluded from taking all the benefits belonging to the profession, and I am still of that opinion. We have plenty of men who are thoroughly qualified both as veterinary surgeons and in business capacity to manage the affairs of the Council equally with the Fellows. I am quite prepared to agree that the Examiners should be selected from the Fellows who have taken the trouble to get their degrees. That was the sole reason why on that occasion we objected to Mr. Campbell, and on that occasion we should have put Mr. Elphick in, only Professor Williams, who undertook to see to the matter, did not do so.

Mr. DONALD: I may say that the Secretary has received a letter from the North of England Society, asking us to support Professor Walley and Mr. Mulvey.

Mr. GREAVES: There is a good deal of truth and common sense in the observations of Mr. McIntosh, but he forgets the fact that in our profession there are a great many who are very apathetic in the way of progress. I do not deny that there are numbers of veterinary surgeons, not Fellows, who are quite capable and would do good work. Fellows, as a rule, are those who take an active part in the progress of the profession, who feel a deep interest in it, and because they show that desire to advance themselves and the profession they become Fellows. I don't say that they are all of that character. There are several men that will hold aloof, as our friend Mr. McIntosh, who is an able man and very fit and capable of becoming a Fellow, but he does not choose to put himself under examination to become one. We should be proud to see him a Fellow, but if he were elected to the Council to-morrow it might be that he would change, as others have done, and become a Fellow. As regards the dual appointment, I can tell you that the Fellows who are elected Examiners are elected because they are eminently fitted for the purpose. They are men who have studied and fitted themselves to become eminent in their profession, and when a man has advanced himself to that stage he is not only a valuable Examiner, but a valuable Councillor. We find those members who are Examiners are such as the Council could ill spare, and I for one should be very sorry to see them not members because they were Examiners. I should prefer, if it were decided that they must be one or the other, that they be members of Council, but the profession would be losers. At present I do not see the force of the argument against it, and I should be very sorry to see anything done to prevent it. But, gentlemen, you cannot prevent it unless you get another Charter, and to do that would cost £600 or £700, and the apathy in the profession is such that you will have great difficulty in raising such a sum. I think we cannot do better than remain as we are.

Mr. CAMPBELL: I am an interested party—I don't know whether I should

say unfortunate—but I am in the position of being both an Examiner and a member of Council. If you will look at the matter broadly you will find that it is extremely difficult for the Council to elect competent Examiners. A member must be satisfied that the party whom he appoints is fitted to be on the Examining Board, and that he is perfectly competent to carry out the duty; and in order to do this a member must be well acquainted with the candidates; he must have full knowledge himself—or have the authority of some one upon whom he can conscientiously depend—that the party nominated is a competent authority. The members of Council created the Fellowship degree with the desire of elevating the profession in its social standing and scientific bearing. I say that any member of the profession who has opportunities for doing so should study his work, and go up like a man, and pass the examination for the Fellowship. The Council, in order to stimulate members of the profession to go in for the examination, have passed a bye-law abolishing the preliminary test, and leaving the examination wholly in the hands of the professional Examiners. So that now you do not require to pass the Dean of Preceptors at all, but simply the professional Examiners. I am very sorry to hear of this agitation beginning. I represent the Scottish Societies, and so long as I have the honour of representing them I will vote as they direct, so that I do not consider myself an independent member. Still I have my own private views in the matter.

Mr. ARMSTRONG: I beg to move that this Society do not pledge itself to support any particular candidate, but that every member vote as he thinks best.

Mr. TALLONTIRE: I beg to second that.

Mr. CAMPBELL: If I may be allowed, as a visitor, to give an opinion on the selection of members of Council, I would remind you that Mr. Mulvey was nominated by the Societies of the North of England, and no one can say that he has not faithfully discharged his duty. Mr. Mulvey has acted in a most straightforward way as the representative of the Societies, and I think every one will agree with me when I say that I may say the same of Professor Walley. He is well known as a representative in his professional capacity; he has spent a great amount of money in furthering the interests of the profession, and if you at any time ask him to come forward with a paper he is willing to do so.

Mr. FAULKNER: I should like to say that there are few more important topics than this one for our attention. I do not think that the fact of a candidate being a Fellow should debar him from the Council. It is well known that some members who are Fellows hold much the same views as a good many of you—more particularly as to the 9th clause; a number of gentlemen who are Fellows and members of the Council think, notwithstanding, that an injustice was done in the past, and if there was any remedy for it that it should be applied. We all have our own individual opinions, and look at things differently, but I hope in an unbiassed way. I confess I was surprised when I heard the remarks which fell from Mr. Campbell, who agitated the question of the 9th clause many years ago, saying that it was manly to turn completely round and act diametrically opposite to what they originally stated they were disposed to do—he and I don't agree as to what is "manliness." As I understand Mr. McIntosh, he thought that all members of the profession should be eligible for election to the Council, but that the Examiners should be selected from the Fellows. As to the latter part I take a different view. I maintain, and I have always maintained, and unless I see good reason to change I shall still maintain—I never yet met the man who could prove to the contrary—that when a man gets his diploma with that diploma he gets certain rights and privileges, and if he continues a respectable member of the profession I hold that those privileges should not be

taken away. There has never been any good reason for taking them away. I hold that it was an injustice to prevent a large portion of the profession from holding positions of honour in it. With regard to certain questions which will be very much before the profession in the coming election, one of which has been alluded to, viz., the dual appointment of member of Council and Examiner, I agree that it is wrong in principle, and if any gentleman can show it is right I will yield my position. Had Examiners not been members of Council we should have had a different investigation and a different result of the recent unpleasantness which occurred in Edinburgh. The Council was sitting in judgment upon itself—I don't say who was right. I quite agree with Mr. Greaves that the members of Council who are Examiners are good men, but I hold the principle is wrong. Another subject occurs to my mind, and it is that the whole of the Council, Vice-Presidents as well as members, ought to be elected by the profession. Vice-Presidents are now elected by the Council alone, not by the body of the profession, as they ought to be. I think that the fact of a man being a Fellow should be no objection to his election on the Council, because there are many Fellows who are perfectly at one with the views I have expressed, and perfectly sound at heart on this question.

Mr. McINTOSH: I should just like to say another word on this question, and it is this, that my idea from the beginning has been that there are business matters connected with the government of the profession from which the bulk of the profession are excluded. I have no fault to find with the Fellows taking a distinctive position. What I hold is this, that at the time this rule was put into force a distinct and great injustice was done to those members who did not qualify, and all chance of participating in the full benefits afforded by the profession was cut off from them. Our profession is so slow to act that the £600 or £700 mentioned by Mr. Greaves would probably not be raised; but if the members were simply to withhold themselves, and pay nothing into the funds of the profession until such times as we had our grievances righted, they would find some good result. We have a right of property taken away by that clause. Why should the Fellows monopolise the whole management of the profession to the exclusion of the others? I have refrained from attempting to take the degree on principle. Many members neither have the time nor the desire to take the Fellowship and pay the fee, and it is certain we cannot all become Fellows. Then why, in the name of all that is good, should they be deprived of all the benefits while at the outset they had these benefits? That is the strongest ground of objection I have. Gentlemen may become Fellows, provided they do not feel as I do, who have taken up a principle and adhered to it.

Mr. CAMPBELL: May I be allowed to make an explanation? Perhaps you may have received a wrong impression as to my view of the position of members of the profession. You are well aware that when I became a candidate I communicated my views in a plain manner by circular, in which I stated that I thought that the passing of a law taking away what I considered was the birthright of every member was iniquitous, that I would oppose it might and main; and my view was then, and still is, that it was a wrong law entirely, this taking away of members' privileges, and that view was distinctly stated.

Mr. Armstrong's motion was then put and carried.

Mr. McINTOSH then read a paper, "On a Case of Laryngeal Obstruction," illustrated with morbid specimens; after which he desired the opinion of the members as to whether what was known as a "grunter" was the result of disease or conformation, and whether, when the animal was neither a roarer nor whistled, but merely grunted, it was unsound.

Mr. CARLISLE, referring to the obstruction, thought that tracheotomy might have been adopted, and time thus given for closer examination.

Mr. GREAVES: This is an interesting specimen and an unusual case. I have never seen a case like it. I think that the horse might have been kept alive for a few days by putting in a tracheotomy tube, but the chances are that the horse would have died whilst the operation of removing the tumour was being performed. Probably the blood would run down the larynx, getting into the bronchial tubes, and he would die of inflammation. I don't think any one could have diagnosed the case more correctly. It was exceedingly peculiar.

Mr. MCINTOSH: The symptoms occurred perhaps two or three times in the twenty-four hours. There was no continuous difficulty in breathing. It was while attempting to swallow solid food, as with a carrot I gave him, that all the characteristic symptoms were produced, so that it was difficult to determine what was the obstruction. This continued eight days from the time I first saw him, but the tumour must have been there longer than that: I believe it would take months to grow. He made no noise in his breathing.

Mr. LITTLE mentioned a similar case within his experience. It was a colt about ten months old. It had these fits for two or three months, but I only saw it have two. It had never been haltered, and the last day it was alive we tried to put one on, and I proposed tracheotomy, but the owner thought that when it came out of the fit it might be adopted, but in the morning the horse was dead. He did make a great deal of noise during the time he was in the fits. If there had been a tracheotomy tube put in that animal I have not the least doubt that I could have taken off the tumour. I have seen one or two somewhat similar cases without tumours, caused by getting horses out that were "mired," and when the halters were not put on properly.

Mr. MCINTOSH: The question of tracheotomy could only occur to a person looking for a short time at the animal. The difficulty in breathing did not last more than two minutes; at other times he was perfectly free in the breath. It was only after he took solid food that this tumour became pressed on the epiglottis.

Mr. CAMPBELL: I think it would be very interesting if we knew the nature of the tumour (it was subsequently cut up). He thought a tracheotomy tube should have been tried. This is a pharyngeal tumour, and not a laryngeal one. I had a similar case, where a polypus formed in the larynx. It produced a great noise, and I at once passed a tracheotomy tube into the animal. It went on for six months, but the cartilages gave way, and it interfered with the animal swallowing, and this was the result—a large mucous tumour in the larynx.

The specimen was handed round and cut into, and the PRESIDENT suggested that it be sent to Professor McFadyean for microscopic examination, and its exact nature ascertained, which was agreed to.

Mr. MCINTOSH: As to Grunting, I am anxious to know whether, in testing a Clydesdale cart-horse, for instance, he is neither a roarer nor whistler, but if you strike him he grunts, is he to be considered unsound? In other words, is Grunting *per se* unsoundness?

Mr. GREAVES thought he was unsound if he grunted. He is a roarer if he grunts. At our establishment, if they grunt I consider them unsound, but we have discretionary power, and unless the grunting is very bad we pass them, and we have not one case in ten years come back on our hands. I have seen light horses that will grunt if you raise your hand ever so gently, but if you galloped them they could not be made to whistle or make a noise. We never reject a horse unless he roars very much indeed.

Mr. CARLISLE: A horse may be thoroughly tested in every respect and his wind be good, but if you strike him he makes a noise. Is it nervousness? and

is he unsound? There is plenty of room for veterinary surgeons to differ on this question. I should say he was unsound.

Mr. GREAVES: So would I.

Mr. FAULKNER referred to a case where his opinion had been asked on a horse which had hunted the previous season; he gave it as his opinion that he was sound enough for harness, and would do his work satisfactorily, but if he hunted another season he would undoubtedly make a noise. Another case was that of a roarer: "I put in one of Jones's tracheotomy tubes, and immediately the noise ceased." My idea as to Grunting is that it is due to the expulsion of air, because this horse, directly you lifted the stick, brought the air through the tube. I think he is unsound, and if he is not a roarer, then he will become one.

Mr. BELL: The noted prize horse "Erl King," as a two-year-old, was a grunter, and he never became a roarer in his gallop. He was examined by nearly every well-known veterinary surgeon in England, and a good many in Scotland, and he was always passed as sound. He was objected to at a local show, when two years old, on account of his grunting. I examined him, and gave him a very severe test, and my opinion was that he was sound.

Mr. GREAVES: What is your opinion of the causes of Grunting?

Mr. BELL: I think it is an involuntary sound, which may be made without disease being present. It is a well-known fact that if a man is hit suddenly in his ribs or abdomen he grunts. Now, is there any unsoundness in his wind? Does it arise from disease? I have experienced the fact that horses which grunt in early life have become roarers and whistlers, but I don't know that this is indicative in every case—that because a horse grunts he is unsound and will become a roarer. If you attempt it, you can make horses grunTERS by habitually striking them. Nervous horses will constantly do it. I have never examined the larynx of a grunter to ascertain whether there was disease, but there is a probability that there is none. In "Erl King's" case he was put to severe tests, and up to the time of leaving Mr. Fearon's hands he was perfectly sound in wind, and he was then twelve or fourteen years old.

Mr. HOWE mentioned a case where he had tested the animal up a hill without making him give out a noise, but if you strike him suddenly he will make a noise. I don't think it is anything but fear.

Mr. CAMPBELL: My opinion is that a grunting horse has no relation at all to a roarer. You may have a roarer and a grunter at the same time. I think they may be quite distinct. Grunting is just the same as striking a man in the ribs; he will give a grunt simply because it is an act of expiration. It is a physiological act. A nervous animal first holds his wind, expecting the blow, and after that lets it go. You can make a horse grunt in a very few weeks or days, or perhaps at once, by habitually hitting him. The distinctive characteristic of a roaring horse is that the sound is produced by inspiration. This matter should be particularly settled, and I think that when our friends say they have condemned horses as grunTERS I would have them see them at work. They would then see that they are good, honest, working horses.

Mr. FAULKNER: I can find a large number of roarers that do grunt, and I assert that you have a far larger proportion of roarers that grunt than of sound horses that are grunTERS.

Mr. MCINTOSH: I have had a difficulty, on being asked for my opinion upon a horse that neither roared nor whistled, but which grunted, as to whether I could pass it as sound or not. My own impression is that a grunter is predisposed to Roaring.

Mr. GREAVES: My friend Mr. Bell says if he strikes me I shall make a noise from fear, and a horse will do the same; but how does it happen that you

may strike thirty, and only one perhaps makes a noise? There is a cause for their not grunting. The grunter, if he takes a cold, will nearly always end in a roarer. I say a sound horse has no right to make a grunt, and strike him as often as you like, will not grunt.

MR. CAMPBELL: I don't recognise Grunting as a premonitory symptom of Roaring.

The PRESIDENT closed the debate, and the members adjourned to the dining-room.

JOHN ARMSTRONG, *Hon. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AT the meeting of the Society on 4th April, at the conclusion of Mr. Hunting's paper on "The Teaching and Examining of Candidates for the Diploma"—

MR. RAYMOND said he did not consider a written examination was necessary to the veterinary student. If the candidate was efficient he would be able to answer the questions submitted at the examination tables with deliberation and success.

Professor AXE said the writer of the paper had dealt with an important and difficult subject in an able and exhaustive manner. He felt it a compliment to the schools and the existing system of teaching that so thorough and painstaking a champion of educational reform could find so little to disapprove of in the curriculum now adopted by the several teaching institutions of the country, and he was pleased at the same time to recognise the importance of some of the suggestions which had been made in the direction of modifying and enlarging the educational course. The author of the paper had disclaimed any right or desire to meddle with the details of teaching; but it was his (Professor Axe's) opinion that any modification of or addition to the existing state of things must be dealt with on the broad basis of details, and not on an abstract consideration of the question. It was impossible to legislate for the education of the veterinary students without some reference and regard to the machinery of the schools, and he hoped that in the course of the discussion which would follow the excellent suggestions of the essayist would be tested by the resources of those in whose hands the education of the student rested. He quite agreed with Mr. Hunting that it was imperatively necessary that the standard of education, scholastic and scientific, should be kept on a line with the requirements of the times, and no one, he believed, desired the consummation of this requirement more than the authorities of the various Colleges, and they would, he was sure, welcome and give the fullest consideration to any practical suggestion which might be made for bettering their position in this important connection, and for furthering the advancement of professional education. He (Professor Axe) had for years recognised and urged again and again the unity of the science of pathology; and he was glad to say that the Camden Town School had ceased to consider the pathology of cattle as a branch distinct from the pathology of the horse and other animals. There could be no doubt that disease processes throughout animal life were initiated, directed and controlled by the same natural laws; and while recognising modifications in the clinical manifestations of disease in different creatures, he saw in this no sufficient reason for continuing to waste the time of students in a repetition of details which only serve to weary and worry, and create disgust rather than a pleasurable interest in the work before them. It would therefore be seen that they had anticipated in their system of tuition the suggestion which the essayist had made in respect to the examination of the student in the subject of pathology, and he trusted that the Council would see their way to arrange the examinations in this respect in accordance with the more

rational principle indicated by the writer of the paper. He was glad Mr. Hunting had called attention to the necessity for more scientific information in regard to hygiene, to which he thought should also be added the principles of sanitation. There was no doubt that the time had now arrived when these subjects should occupy the first rank in our educational course. He (Professor Axe) was aware of the difficulties attendant upon any considerable extension and rearrangement of the curriculum of a school, but he could not shut his eyes to the fact that much remained to be done ere the veterinary student could claim to have received a thorough and rational education. It was certain that rapid strides in the direction of progress had been made during the past twenty years, and the profession had much to congratulate itself upon; but he could not help thinking that the all-important item "preventive medicine" had been too long left out in the cold. He should welcome its addition to the demands of the Royal College, and would be glad to see it take a forward position in the curriculum of every veterinary school. He thought Mr. Hunting had not been happy in comparing the present-day teaching of chemistry with that which existed in what he has been pleased to term "the dark days of professional ignorance." He would remind him that at the period referred to practical chemistry had no existence in any veterinary institution, and the prescribed course was then both limited in amount and elementary in character. At the present time the subject was not only more thoroughly taught, but taught on a more comprehensive scale, and he believed that more time was devoted to it now, during the seven months and a half, than was formerly given to it in the course of the two six months sessions. What was still more satisfactory, every student was compelled to make it a practical study. Notwithstanding this, he believed the system of teaching chemistry might be improved by devoting the first period of the session to theoretical chemistry, and the later period exclusively to its practical application. In dealing with the subject of anatomy Mr. Hunting had not done justice to his experience as a teacher and his general knowledge of the educational requirements of the student. For himself he thought it most desirable that a student should thoroughly study and master the anatomical details of the passive organs of locomotion before he was permitted to enter upon a consideration of the active. The bones were the landmarks of muscular attachment, and with these the mind should be well impressed before dissecting of muscles was permitted. Nothing served so much to render dissection distasteful, and to lead to mutilation and waste of subjects, as a want of that light to the attachment of muscles which a complete knowledge of the bones offered. As to the articulations, they too, like the bones, must of necessity be studied first apart from the muscles, and only in this way would a rational understanding of their mechanism be obtained. The existing plan of teaching and examining in the subject of anatomy appeared to him to be most satisfactory, and should not be changed unless a substantial improvement could be effected in it.

Mr. SHEATHER strongly advocated a written as well as an oral examination. Written examinations would be useful because they would form a check on the examiner, for there remained on paper what the examiner had asked and what the student had written; but in written examinations it was very necessary the examiners should be experienced, for some questions would admit of being answered in three or four different ways, and each be reasonable answers. The questions should be few in number, and ample time should be allowed the student to give the question a proper consideration. To give a candidate a number of questions to answer in a short time would be the means of making him answer the whole badly.

Mr. HURNDALL also strongly advocated a written as well as an oral examination, because a written examination helped a nervous man. Mr. Hunting

had not gone into the question of preliminary examination as deeply as he had expected he would have done. He (Mr. Hurndall) considered the student should have a fair knowledge of Latin and some knowledge of French, and that steps should be taken to make the preliminary examination more stringent, in order that they might get men of greater calibre.

Mr. HENRY EDGAR regarded the present system whereby a student was allowed to join the teaching schools in the middle of a session as most objectionable. When he commenced his studies at Camden Town he found himself in the middle of anatomy before he had been through the elementary part. He thought it was most necessary to introduce the teaching of hygiene and sanitation at our schools, and it also appeared to him that the time had come when "materia medica" and "therapeutics" should be carefully and fully gone into, so that the greatest possible advantage might accrue to the students. The question of the fees of the schools was important. In London they amounted to forty-five guineas. They could not expect a boy twelve years of age to receive a three years' education for so small a sum. To raise the fees would be to raise the standard of the profession and would be more fair to the schools.

On the suggestion of the President, the discussion was then adjourned to the next monthly meeting.

An ordinary general meeting took place on Thursday, May 2nd.

Alfred Broad, Esq., the President, occupied the chair. Present, twenty-three Fellows of the Society and three visitors.

Mr. Alfred Prudames, M.R.C.V.S., of Berkhamstead, and Mr. H. C. Legge, M.R.C.V.S., of Dorking, were unanimously elected Fellows of the Society, and Mr. G. Reddish, M.R.C.V.S., of London, was nominated for Fellowship.

The PRESIDENT exhibited a portion of the intestine of a dog with a pebble (which the dog had been seen to swallow) impacted in it, and Professor Axe brought before the meeting a portion of the walls of the stomach of a yearling colt which was deeply ulcerated; the colt had died from Tetanus. This specimen excited an animated discussion, in which Professor Axe, Messrs. Mulvey, Edgar, and other gentlemen took part.

The discussion was then resumed upon Mr. William Hunting's paper on "The Teaching and Examining of Students for the Diploma." The President pointed out that there were many points in Mr. Hunting's valuable paper worthy of their best consideration. He thought they would all agree that his suggestions as to the introduction of the science of hygiene into the curriculum of schools and the adoption of written examinations would be decided improvements. He agreed with the essayist that the study of anatomy, physiology, and chemistry should be spread over a larger period of time, as forced and rapid studies were apt to be soon forgotten. He hoped the meeting would see its way to appoint a committee to thoroughly consider the subject, as suggested at the last meeting.

Mr. EDGAR repudiated the essayist's suggestion that practitioners cannot combine a first-class knowledge of all diseases of all animals. He thought such an assertion was rather an insult to them. No doubt some gentlemen make a certain class of animal their special study, but he did not consider this rendered them any more qualified to be examiners, but it might narrow their knowledge of the various forms of pathological changes met with. In his opinion the man who had a good practical all round knowledge of pathology was the one to find out what a student knew. Specialists were very apt to have fads and fancies. He would ask for more prominence to be given to canine pathology and surgery, for he regretted that there was so little attention given to this important subject. Canine pathology was very imperfectly taught, and he was not asked one question on it by any examiner. Surely this was not right when dogs were occupying such a prominent

position in public estimation. He must also take exception to the essayist's remark that "obstetrics are chiefly applicable to the cow," for the most difficult cases were met with in the mare and bitch. He certainly preferred the suggested new classification to the old, and he also wished for written examinations, believing that they would more fully test the student's knowledge. He did not think it would be an advantage to reduce the number of the examinations from three to two, nor could he see any objection to the first or class "A" examination. He thought hygiene could be more conveniently added to this than to either of the other examinations, because he believed there was plenty of time during the first twelve months for that subject to be well mastered by the student. He now came to the most important part of the paper—the selection of examiners: this was one of the most important duties the Council had to perform; and although he had not the slightest objection to any gentleman now holding that position, he did most emphatically object to the examiners having a seat on the Council. If it was an honour to occupy a seat on the Council, and remunerative to be an examiner, why confine it to a few? It was wrong in principle, and he thought that they, as the leading Veterinary Medical Association, were justified in entering their protest. The time would come when the dual office would not be tolerated. If a gentleman on the Council be appointed examiner, let him retire from the Council, and let the vacancy so made be filled up. Now a member of the Council might vote for himself as examiner. Again, he objected to examiners being elected for five years; they might also as well be elected a lifetime; two years, in his opinion, were quite sufficient, and it was no trouble to re-elect them if advisable. He agreed that the examiner who took the practical examination should also take the oral, because in his experience he had almost the same questions put to him at both examinations. As to the Matriculatory Examination, he thought that 25 per cent. of marks passing a man was a disgrace, and that at the very least 50 per cent. of marks should be obtained.

Mr. HURNDALL said it was quite impossible to criticise all the points in this paper which deserved their attention, for he had no doubt they would all agree with him that there was scarcely a sentence which might not usefully be discussed, and he was certain it must have taken a great deal of thought and time to prepare it. Mr. Hunting said, "Nay, it appears even probable, when we consider that the Council may be roughly divided into two classes—examiners and teachers, who, from previous associations and unconscious bias, would naturally propose no radical change; and practitioners and others, who, from their training and position, cannot be expected to have very definite ideas about teaching or examining." Now he took exception to that; he did not know why a man, because he was a practitioner, should not be able to teach, and if he was qualified to teach he was qualified to examine up to a certain point. But here came in the difficulty: he did not agree with Mr. Hunting that if a man be endowed with a power of teaching, therefore he must be qualified to examine. One of the greatest essentials in an examiner was that he should know, not how to find out what a man did not know, but to find out what he really knew. He had had conversations with young men as to their experience under examination, and in a number of instances he had heard it expressed that there was a tendency to stick to one subject; he did not think that was the way to find out what a man knew. Again, the demeanour of the examiner often perplexed the candidate; that was one reason why he strongly advocated written examinations. There was another point. Mr. Hunting said "the first division (Medicine, Surgery, and Pathology) would have two examiners." He (the speaker) questioned if that would be desirable, because it was a most important thing to distinguish very particularly between what was called Pathology and Morbid Anatomy: it was

most essential—if they were to progress with the times, and able to take their stand with the sister profession in illustrating many points which they now claimed to be able to do—that they should have a distinct and clear understanding upon Morbid Anatomy; and to have one table for that subject was certainly not too much. He was quite at one with the essayist, that in the matter of Therapeutics they were woefully behind. Professor Brown, at the opening of the Camden Town College, spoke rather slightly of the value of Therapeutics (a member: No! drugs). He might be wrong, and would be only too willing to admit it, but that was the impression left on his mind. Therapeutics was a valuable subject, and he thought if a special course of lectures were given upon it, it would be to the advantage of the student. He agreed with what Mr. Edgar had said as to the examiners sitting on the Council; it was a matter which must be brought to the fore, and if the gentlemen who sat on the Council did not feel that the opinions expressed by the profession were sufficient to demand their attention, well, they must go on discussing the matter until they do; time would bring it about, no doubt. It was an unfortunate thing that some little consideration was not shown on the part of the Council to the wishes of the profession. One point Mr. Hunting had not touched on was the fees for entrance and passage through the curriculum of the College. £45 was a perfectly inadequate sum, and did not enable the College to do its duty by the student. He certainly advocated the formation of a committee to thoroughly go into the matter from beginning to end, and to make suggestions which would be submitted to the Council.

Mr. SIDNEY VILLAR said the essayist had pointed out the responsibility which rested with each one of us as to the qualities of every new man who was admitted into the ranks of our profession; and no doubt this paper would act as an excitant, and cause at all events some of us to consider this important matter of examinations and examiners more seriously than we have hitherto done, especially as Mr. Hunting tells us that he thinks “that our existing arrangements for the admission of men to the profession are positively evil.” But although he (Mr. Villar) had read his paper carefully, he was unable to find that he points out where such positive evil exists. Under the heading “What should entitle a man to receive our diploma?” he is apparently content with existing arrangements, except that he would do away with the special tables on Cattle Pathology and Morbid Anatomy; would have a separate table for Materia Medica and Therapeutics, and would make the science of Hygiene a test subject. As regards Hygiene, under which head he includes stabling, feeding, and shoeing, nine years ago, when he (Mr. Villar) obtained his diploma, an extensive knowledge of all these details was required to enable a student to pass the practical part of his third examination, and he had no doubt the same obtains now. At that time there was a special table for Materia Medica, and it seemed a pity it should ever have been allowed to drop through. He hoped Mr. Hunting’s suggestion as to the institution of a special table for the subjects Therapeutics and Materia Medica would receive favourable consideration, but could not help thinking it would be disastrous to do away with the special table on Cattle Pathology, more especially as he noticed Mr. Hunting, in his suggested curriculum for the use of schools, makes no special provision for teaching this important subject. Although many of the diseases of cattle come under the heading of “Contagious and Parasitic Diseases and Obstetrics,” still there are many other diseases which could not be included in either of these classes. In country districts, where most young veterinary surgeons commence practice, the treatment of cattle is of equal importance with the attendance on horses, and he thought, instead of throwing cold water on this important subject, as would undoubtedly be done if Mr.

Hunting's suggestion was carried out, we ought rather to do all in our power to draw increased attention to it. Mr. Hunting also says, "Whatever standard of excellence we require the average candidate to reach, will be the level of the school teaching." Now, I don't think he is fair in this statement; I could name several subjects in which the standard of examination at Red Lion Square is much below the lines of the teaching at Camden Town. Again, he objects to the present method of examination in anatomy; he does not consider it advisable to have a special table for osteology and syndesmology. Here, again, I venture to disagree with him, for now-a-days a man must thoroughly know his bones, or he cannot get out of Class A; whereas before the existing arrangement came into operation many men who passed knew well the minute anatomy of the brain and kidney, but were unable to recognise individually the bones of the knee or hock. Mr. Hunting considers the study of chemistry, anatomy, and physiology should go on concurrently; but I think the present arrangement, whereby a man must have a good knowledge of chemistry and some knowledge of anatomy before he is allowed to commence the study of physiology, is more reasonable, and more like to lead to better results. I do not consider a summer session is necessary for the study of botany, although it would of course be beneficial. It is still a fortnight before the examinations commence at Red Lion Square, and there are now in our hedgerows flowers typical of a large number of natural orders, and many of these have been in bloom for weeks; so that if a student feels inclined, he has a good opportunity of practically studying botany. Mr. Hunting strongly advocates the adoption of written examinations; and with all which he says on this head I agree, except that I do not think the average student can do a written examination on any one subject in half an hour. To do well at written examinations a man requires practice at that class of work. Mr. Hurndall had suggested that both Latin and French should be made obligatory subjects at the Matriculation Examination, but I think it would be better to so include only one language, and to make elementary chemistry or elementary botany, or both, obligatory; because the period of study at the veterinary schools is now short, and a little useful information on these subjects is bound to be beneficial to the student, and would assist him in his future studies at college.

Professor AXE said he had already pointed out that any change in the existing system of examining and teaching must be considered on the broad basis of detail, in order to make the one conformable to the other. Mr. Hunting had proposed to abolish the first examination and to reduce the number to two instead of three. In the first he proposed to include Anatomy, Physiology, Chemistry, Botany, and Hygiene, and to carry on the teaching of these several subjects for two years. It had been pointed out by him as undesirable that students should enter the schools in the middle of a course; but if the suggestion of the essayist were adopted the schools must either close their doors to students one year in three, or they must admit them, as it appeared to him, in the middle of a prolonged course. It had to be remembered that the subjects included in the first division of the curriculum laid down by Mr. Hunting were vast and important ones, and entailed an immense amount of work, and he believed they would be better taught, and understood, and retained by the student in the existing small groups, than in the larger one set down in the paper. He (Professor Axe) saw insuperable difficulties in the way of adopting the system suggested under existing circumstances. It was, he thought, most desirable that the labour of the student should, as far as possible, be divided, and the confusion and embarrassment arising out of the study of a multiplicity of subjects at the same time avoided. From a long and large experience as a teacher, he felt that the development and consolidation of the existing system would be

more advantageous than change. Referring to the question of Canine Pathology, Professor AXE said that the subject had recently received more attention than at any former time, and he hoped still more would be given to it in the future. He could not admit that the subject was imperfectly taught, although he was aware it might and would be more extensively dealt with.

Mr. KENDALL (of Hitchin) was in favour of a committee being appointed to consider the whole subject, and forward any suggestions to the Royal College of Veterinary Surgeons. He could not agree that botany could be properly studied in the winter session. He was certainly in favour of written examinations, for it seemed to him that in oral exams. the man with the biggest amount of "cheek" did best, and the nervous man never seemed to get on; but if the written examinations were adopted more than half an hour must be given to each subject. The formation of a canine table would be more or less valuable to town practitioners, but he thought country practitioners had an equal right to demand a table of sheep pathology: he was confident that there was a great future before them in the study of ovine diseases.

Professor PRITCHARD, as President of the Royal College of Veterinary Surgeons, remarked with regard to the Matriculatory Examination, that the Royal College had the power to question the schools as to the educational test they put the candidates for admission to their institutions, but it had never been called upon to do so; the schools were given credit for testing their pupils in a proper way.

Mr. ARTHUR ROGERSON said he was inclined to agree with Mr. Villar in the objections he had raised to Mr. Hunting's proposed curriculum. If Mr. Hunting's ideas were carried out he thought the students would get tired, and lose heart through having to wait so long for their examinations. As to the study of botany, it could be carried out practically at this time of year, when there were plenty of plants to be met with in the lanes and hedges. Speaking of the Final Examination as now carried on, with a division into Theoretical and Practical parts, he said the student who passed his theoretical but failed in the practical was sent down to practise with some veterinary surgeon, but it was compulsory that he should attend the College lectures for one month previous to again presenting himself for examination. Now, he did not think there was any necessity for such a regulation; it put the student to great expense, and the practitioner to great inconvenience. He had been in conversation with students about this, and they all seemed to think it was wrong to make this month's attendance compulsory; he laid this before them as a suggestion which he thought worthy of the consideration of any committee which might be formed.

The PRESIDENT then called upon Mr. Hunting to reply to the various points raised in the discussion.

Mr. HUNTING: I think I may feel some satisfaction in having travelled over such a lot of ground and met with so few difficulties and objections. Apparently most of my suggestions are accepted, and I need only just notice the most prominent differences which this discussion has evolved. Professor AXE says he is satisfied with the present system of teaching and examining as applied to anatomy. He very rightly argues that the bones should be thoroughly understood at the outset. I also hold the bones should be thoroughly understood, and it is for this reason I object to the present system. I say they cannot be properly learned unless dissection of muscles is part of the course by which they are learned. Still more is dissection necessary to learn the ligaments, and that not confined to mere ligaments, but embracing the muscles, for tendons of the muscles are often of greater value in enclosing and limiting the motion of joints than the special ligaments. Locomotion can only be understood by a study of bones and muscles *in situ*

—the active and passive organs together. Mr. Edgar thinks my remark that no one can be all round a first-class man reflects on the profession. He holds that a practitioner may be equally as clever with the diseases of horses as he is with those of cows and sheep. Well, I only judged by my self, and I know I am not. I simply know nothing of cows and sheep. Mr. Edgar could see no objection to the "A" examination, nor any advantage in reducing the three examinations to two. My idea is that the existing arrangements limit the teaching and cause "cramming," and that they compel an injurious subdivision of some subjects, with a very evil compression of others. Mr. Hurndall thinks my scheme would include the removal of an examination on Morbid Anatomy. It would not. I simply propose that it be tested at the same table as Practice of Medicine and Surgery, by an examiner who shall be a specialist. He also takes exception to a remark of mine which implies that few practitioners are fit for examiners. I do not think we really differ much. I only say a man may know his subject well, and yet not be able either to convey his knowledge to others or extract from them what they know. I believe that a good teacher will always make a good examiner, and that a man who could not teach is also a man who cannot examine. Concerning the inadequacy of £45 as fees for a whole College course, I will only say that if it pays the school it does no harm to the student, and is a good thing for the parents. I cannot allow that a higher fee, by excluding poor men, would be productive of any advantage. Mr. Villar says he does not see any evil in the existing arrangements. I can only refer him again to my paper, and to some of the remarks we have heard to-night. His own remarks include one or two suggestions which would make a decided improvement; as, for instance, the written examination and the special table for Materia Medica and Therapeutics. Mr. Villar is quite wrong in thinking I would detract from the examinations on cattle diseases. I would alter the name of the table at which special bovine and other diseases were tested, and I would examine on all the General Pathology at another table. I only suggest the alteration as one of convenience, and as avoiding the notion that medicine and surgery and morbid anatomy are distinct things in different species of animals. Mr. Villar's strongest point is where he takes issue with me about the first or "A" examination. He says, "Mr. Hunting considers the study of chemistry, anatomy, and physiology should go on concurrently, but I think a man should have a good knowledge of chemistry and anatomy before he commences the study of physiology." Now, this at first sight seems to be a fatal reply to my most prominent suggestion. As a matter of fact, I do not propose the exact concurrent study suggested. I should allow some chemical and anatomical progress to be made before physiology was taken up. My idea of a physiological course includes histology, and also the minute anatomy of each special organ, so that only an elementary knowledge of anatomy is requisite for a man to clearly follow the lectures. I hardly agree with Mr. Villar that our Matriculation Examination should include elementary chemistry or botany; but if it did we should have gone a long way to have entirely removed Mr. Villar's objection to my proposal. Professor Axe tells me that there are "insuperable difficulties" to my plan of having anatomy, chemistry, botany, and physiology taught in two sessions before any examination is applied. He says that were the subjects extended in a systematic course over two sessions, men who joined the school in the middle of a course would lose half their education, and this could only be remedied by refusing to admit any students one year in three. If this be correct, I must allow my scheme to be impracticable; but I hold it is not. When only two sessions were demanded we had to learn the subjects and pass in them. I only propose that two sessions be allotted to

Chemistry, Physiology, Anatomy, and Hygiene, including Botany. The third session I leave for Medicine, Surgery, Pathology, and Materia Medica, and Therapeutics. I do not suggest that the first four subjects should be extended as one course over two sessions. I should divide them, if necessary, and I should *repeat them*. Physiology I should most certainly repeat every session as a complete course, and I feel certain it would never be stale or unprofitable. I should hope that instead of a man being, as now, "crammed" in seven months, he would be really taught in the two sessions. Mr. Rogerson is of opinion that by delaying the First Examination for two years students would get tired and lose heart. I appreciate this objection, and would propose to enliven and sustain them by periodic written examinations, conducted in the schools by the Professors. I have not thought out all the details required to make my suggestions workable. I ask the teachers to help me to this. I have pointed out what I consider evils, and many of you acknowledge them. If they are evils we must try and find a remedy.

Professor AXE moved, "That a committee be formed to take into consideration the question contained in Mr. Hunting's paper, and that if thought desirable representation be made to the Council of the Royal College of Veterinary Surgeons of any improvement which might suggest itself to the committee in the course of their deliberations."

Mr. EDGAR seconded this resolution, which was carried unanimously, and the Council of the Society, with its *ex-officio* members and Messrs. Henry Edgar and J. S. Hurndall, were appointed as a committee.

Mr. WILLIAM ROOTS proposed a vote of thanks to Mr. Hunting for the very able manner in which he had defended his essay.

Mr. SAMSON had great pleasure in seconding this vote of thanks, which was carried with acclamation.

Mr. HUNTING having replied, the proceedings terminated.

ROYAL AGRICULTURAL SOCIETY.

At the Council meeting held on May 1st Sir John Thorold stated that Professor Brown had presented the following report:—

"*Pleuro-pneumonia*.—Between the 16th March and 20th April thirty-three outbreaks of this disease were reported in Great Britain—eighteen in England, and fifteen in Scotland. This is a decrease of twenty-two, as compared with the corresponding period of last year. In the five weeks above referred to 100 cattle were attacked; forty-eight of these were in England, and fifty-two in Scotland. In addition to these, 550 healthy cattle in contact were slaughtered—161 in England, and 389 in Scotland. In Ireland there have been ten outbreaks in the five weeks, eight of them in Dublin, one in King's County, and one in Meath; twenty-four cattle have been attacked, and 178 healthy cattle were slaughtered because they had been in contact with the diseased.

"*Anthrax*.—There have been sixteen outbreaks of Anthrax reported in England in the five weeks, and two in Scotland. Twenty-two animals were affected in England, and three in Scotland.

"*Swine Fever*.—This disease is not quite so prevalent as it was about this time last year. The annual increase, which generally begins about the beginning of April, is scarcely noticeable as yet. There have been 422 outbreaks reported in the five weeks, and 2,076 swine have been attacked, of which 1,058, or a little more than half, were killed, 909 died, and 141 recovered."

In reference to the statements at the special meeting of the Council held on the 16th April, that the Government were ignorant of the existence of Foot-and-mouth Disease in Germany, Professor Brown had called the attention of the committee to the fact that in the annual reports issued from the

Agricultural Department the existence of Foot-and-mouth Disease, and the places where it existed in Germany, had constantly been distinctly pointed out.

The report of the Conference, held on the 28th and 29th March, of representatives of the three national societies on the subject of cross-Channel traffic in cattle, had been laid on the table. A letter had been received from Mr. David Evans, of Haverfordwest, accepting the appointment of Provincial Veterinary Surgeon for Pembrokeshire; and the committee, recommended the appointment of Mr. B. Freer, of Uppingham, as Provincial Veterinary Surgeon for the county of Rutland.

Various letters from residents in the vicinity of Windsor with reference to the present restriction of the area of competition for the prizes to shoeing-smiths had been read, and the committee recommended that the competition be extended to an area of ten miles round Windsor, and that the date for closing of entries at ordinary fees be postponed until the 6th May.

Professor BROWN said that at the meeting of the Veterinary Committee yesterday he pointed out that the tone of most of the speeches at the special meeting held on the 16th April appeared to be based on the supposed ignorance of the Government as to the existence of Foot-and-mouth Disease in Germany, and he asked to be allowed to call attention to the fact that the annual reports which were issued by the Agricultural Department had contained from the first a perfectly distinct statement of the existence of the disease in Germany, and had frequently given the number of animals attacked so far as their information extended, and the particular provinces in which the disease was most rife. He could not, therefore, understand the remarks which he read in the report of the proceedings, such as that the Privy Council were unaware of the existence of the disease in Germany, and that if they had known it they would not have made the Order; the fact of the matter being that not only the Privy Council, but also the public and the members of the Legislature, must have been perfectly well informed on the subject. It was well known before the Act of 1884 was passed that Foot-and-mouth Disease was existing in Germany. Indeed, it was impossible to read the 1st and 3rd sections of that Act without realising the fact that those provisions contemplate importation from a country where Foot-and-mouth Disease exists, as it would be absurd to provide for the Privy Council being satisfied of the existence of a reasonable security against the introduction of disease from a country in which no disease existed. With regard to Germany, he might tell the Council that they were always informed by the German authorities immediately an outbreak of Foot-and-mouth Disease occurred, and the German Government instantly on the discovery of an outbreak prohibited the export of animals from the district where the disease existed.

Army Veterinary Department.

War Office Gazette, April 23rd.

G. H. Fenton, late Veterinary Surgeon, whose retirement, receiving a gratuity, was notified in the *Gazette* of 2nd October, 1888, is restored to the Department as a Veterinary Surgeon First Class, ranking as Captain, and is absorbed in the vacancy in the establishment caused by the resignation of Veterinary Surgeon T. Caldecott. Dated 27th April.

Veterinary Surgeon on probation, R. J. D. Tibaldi, to be Veterinary Surgeon, ranking as Lieutenant. Dated 10th October, 1888.

Artillery Volunteers.—2nd East Riding of Yorkshire. W. Longhurst, gent., to be Veterinary Surgeon. Dated 24th April.

Gazette, May 10th.

Artillery Volunteers.—4th Lancashire. W. Walls Townson, gent., to be Veterinary Surgeon.

Gazette, May 14th.

The undermentioned Veterinary Surgeons to be Veterinary Surgeons First Class, ranking as Captains:—

Edmund Day	..	..	..	dated 17th May, 1889.
Charles Rutherford, F.R.C.V.S.	..	..	"	" "
Kay Lees, F.R.C.V.S.	..	..	"	" "
Frederick W. Forsdyke	..	..	"	24th " "

Gazette, May 17th.

Fourth Volunteer (Cinque Ports) Brigade, Cinque Ports Division, Royal Artillery.—W. Plomely, gent., to be Veterinary Surgeon, dated May 18th.

W. A. Russell, F.R.C.V.S., Inspecting Veterinary Surgeon, will succeed G. A. Oliphant, F.R.C.V.S., as Principal Veterinary Surgeon in India, on the return of the latter to this country in the autumn.

Veterinary Surgeons, First Class, Burt and Davis have been granted an extension of sick leave from India. Veterinary Surgeon Appleton has arrived, in England on sick leave from India. Veterinary Surgeon, First Class, Anderson has embarked for a tour of foreign service in Egypt.

At the levee held by the Prince of Wales, on behalf of Her Majesty the Queen, at St. James's Palace, on May 8th, Veterinary Surgeon W. Owen Williams, Lothians and Berkshire Yeomanry Cavalry, was presented by the Earl of Haddington.

Obituary.

THE death of the following members of the profession has been announced:—

J. B. Jones, Ludlow, Salop, who graduated in 1837.
G. Harrison, Stafford, " " " 1842.
H. R. Bradshaw, Dublin, " " " 1874.

Notes and News.

ANTHRAX INOCULATION IN ITALY.—The Ministry of Agriculture has, in compliance with special requests from each of the localities, granted subventions to the veterinary schools at Turin, Bologna, and Pisa, to promote the practice of protective inoculation against Anthrax in the province of Sassari, and at Foligno and Civitavecchia, where the disease is causing great loss of cattle.

ANTHRAX INOCULATION IN RUSSIA.—According to the *Revue Scientifique*, the regretted Professor Cienkowsky had in Russia, from 1885 to 1888, protectively inoculated 20,310 sheep against Anthrax. The average loss was 0·87 per cent. In a flock of 11,000 sheep the mortality from Anthrax was usually from 8·5 to 10·6 per cent., but with inoculation it fell to 0·13 per cent. In an experiment made thirteen months after protective inoculation eighteen of twenty of these sheep resisted the action of Anthrax virus. These results are very satisfactory, and are calculated to popularise this preservative measure in Russia, where it should render great service.

PROTECTION OF THE VETERINARY PROFESSION IN THE UNITED STATES.—The Pennsylvania Veterinary Medical Association has undertaken the passage of a legislative act in regard to the regulation of the practice of veteri-

nary medicine, which differs essentially from those passed in the last two years in the neighbouring States of New York and New Jersey. The new form does not prohibit any one from being employed or from practising in any way, but it does prohibit any one from calling himself a veterinarian or from claiming any analogous title unless he is entitled to it. It affords a much more tangible means of charge for any misdemeanour. A card, a bill-head, an announcement of any sort, claiming practice on the part of the delinquent, lays him open to prosecution with ready proof of his guilt. The moderate limit of five years for non-graduates allows any "existing practitioner" ample justice for his *droit d'être*.

RABIES IN ALASKA.—In Fleming's "Rabies and Hydrophobia" allusion is made to a disease closely resembling or identical with Canine Rabies occurring among dogs in Greenland, and even for some distance in the Arctic regions. With reference to this malady, Mr. Edward W. Nelson, in his recent report upon the natural history collections made in Alaska, speaking of the Eskimo dog, says, "There is a peculiar disease, very much akin to the madness of dogs in lower latitudes, which the Eskimo dog is subject to from Greenland to Behring Sea. A dog bitten by another afflicted with this disease becomes afflicted in the same manner in a few days. I made careful inquiry, but could learn of no authentic case where a person had been bitten, although I heard a vague account of a man having died at Pastolik from the effect of such a bite. The natives have the greatest fear of a dog in this condition, yet appear to have a superstitious dread of killing it. Both young and old dogs have the disease, and I have seen a puppy only a few weeks old afflicted with it in the most aggravated form. As a rule the first symptoms appear within four or five days of the time the bite is received. The dog refuses to eat, becomes restless and irritable, his head soon becomes swollen, and his vision is affected. He then has alternating periods of stupid quietness and aimless activity. During the latter he runs blindly about, staggering from side to side, but keeping with apparent difficulty a nearly straight course until something turns him. When moving about in this way he bites any dog or other living object in his path, and frequently runs blindly into some obstacle, from which he starts off in a right angle to his former course. During this time his eyes are fixed and glaring, and his head hangs down as if overweighed, and is slowly swayed from side to side. They are easily avoided, and if kicked out of the way they rarely renew the attack, and never with any spirit. The attack is sometimes preceded by a hæmorrhage from the nose and mouth. In rare cases a dog recovers, but usually they die in one or two days from the time of the first symptoms. During some seasons great numbers of dogs die from this cause."

DR. OSLER.—We have much pleasure in announcing that a valued and valuable contributor to the VETERINARY JOURNAL, Dr. William Osler, Professor of Clinical Medicine in the University of Pennsylvania, has been appointed physician to the John Hopkins Hospital, and Professor of Medicine in the John Hopkins University. Dr. Osler took his degree in the McGill University, Montreal. He subsequently studied in London, Berlin, and Vienna, and in 1885 was appointed Gulstonian lecturer in the Royal College of Physicians, London, and in 1886 Cartwright lecturer in the College of Physicians and Surgeons, New York. For some years he was a teacher in the Montreal Veterinary School, his retirement from which was much regretted.

COWPOX IN DENMARK.—In Denmark, in 1887, there were 349 cases of Cowpox reported. In the first quarter of the year there were 11 cases; in the second, 13; in the third, 18; and in the fourth, 12.

THE ARMY VETERINARY DEPARTMENT AT THE ROYAL ACADEMY AND GROSVENOR GALLERY.—In the last number of the Journal, a notice was given of Mr. Adrian Jones' (A.V.D.) beautiful statuette in this year's Royal Academy Exhibition. In the Grosvenor Gallery Exhibition Mr. Jones has been no less fortunate in obtaining a place for his other statuette, which has been most favourably noticed by the public press. For instance, the *Daily Chronicle*, in describing the sculpture in that exhibition, says, "A bronze group of 'The Last Arrow,' by Adrian Jones, is deservedly placed in the most conspicuous position on the central table in the principal gallery. The work, a most vigorous and masterly conception, shows us an American Indian buffalo-hunting. With his horse at wildest speed the 'brave' has galloped his noble quarry to close quarters, and with but one arrow left is taking careful aim in order that he may give the grand brute his *coup de grace*. The design is an extremely fine one, suggesting the mastery of man over the whole brute creation, whilst the special characteristics of the horse, excited by the chase, his savage rider, and of the formidable-looking beast whose home is in the prairies are splendidly given. One is disposed to think that the artist would do well could he repeat such a work the size of life."

ROYAL VETERINARY COLLEGE.—On April 8th, Dr. G. Fleming, C.B., Principal Veterinary Surgeon to the Forces, delivered a lecture to the students of the College on the subject of the "Art of Shoeing." In a previous lecture Dr. Fleming had discussed the history of the art, its antiquity, and its paramount importance in countries where horses were used for continuous work on hard roads, and showed that the art had been recognised in the past by kings and nobles, some of whom did not disdain to practise it. The concluding lecture, on April 8th, was entirely confined to the practical part of the subject, and the lecturer expressed his opinion that the art was a simple one, and, if properly carried out, free from most of the evils which are commonly asserted to belong to it. A chief evil, in his estimation, was the mutilation of the hoof by rasp and drawing-knife, which he strongly condemned. Iron shoes fastened with nails Dr. Fleming held to be necessary; and he contended that if the crust were properly lowered at the bottom of the foot, where alone the rasp might be safely used, nails might be driven so as to take a wide hold, coming out of the wall in such a way that at each fresh shoeing the old nail-holes might be obliterated. Sole and frog should be in contact with the ground, and he did not hesitate to nail far back to the heels, to gain security with few nails, as he was satisfied that the expansion at the posterior part of the foot, on which so much stress was laid by some, could only take place to a very slight extent. The chief expansion is at the upper part of the heels, between the lateral cartilages. In conclusion, the lecturer impressed on the students the necessity which existed for the supervision of the farrier's art by scientific and experienced veterinary surgeons, in order that the many abuses might be remedied.

VETERINARY SANITARY SCIENCE IN RUSSIA.—The good effects produced by the sanitary inspection of cattle are referred to in a recent report on Russian affairs. Cattle-breeding in South Russia has suffered a serious check in consequence of the heavy losses incurred by graziers from the outbreak of Rinderpest, which in recent years has carried off whole herds of oxen. The central Government at St. Petersburg, working through the Veterinary Department of the Medical Board, has established a Sanitary Board as an administrative body in every Government in European Russia. The Imperial Government also appoints a veterinary surgeon in each district, who corresponds with the Government Sanitary Board, and whose duty it is to inspect any herds or flocks suspected of contagious diseases, and to see that all infected animals, as well as those suspected of infection, are

slaughtered. The expenses of this administration, and the compensation awarded to owners who have sustained losses, are defrayed out of a tax levied on every animal slaughtered at the shambles or destined for exportation. The effect of these measures has been that the cattle plague is now said to be almost extinct in South Russia.

HEAVY LOSSES BY ABORTION IN MARES.—It is very much to be regretted, says the *Farming World*, that this unwelcome plague is playing serious havoc in not a few valuable studs this year. Mr. Johnstone, Lochburnie, has lost no fewer than five foals in this way, and one of the mares affected is the celebrated Sunray. In Lord Polwarth's stables four similar cases have been experienced. Such heavy losses are no small matter, considering the high prices Clydesdales are now commanding.

A FEMALE VETERINARY SURGEON.—Fräulein Stephanie Kruszewska, a Polish lady, having graduated with distinction at the Zurich Veterinary Institute, has recently successfully undergone a further test in the Warsaw Veterinary Institute, which allows her the privilege of practising in that city.

KILLING COWS IN INDIA.—Indian agriculture suffers greatly because of the general practice of killing cows, a practice peculiar to Mohammedans. A society has been formed to stop this practice, which has become so general that there is a scarcity of milk in many sections. It is believed that ninety per cent. of the meat eaten in India is cow beef, whereas the contrary is the case in most other countries. Consequently, the Indian oxen are diminishing in number, size, and strength, and the production of manure is decreasing.

Correspondence.

PROTECTIVE INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA.

SIR,—In October last the Government of this colony taking advantage of the presence in Australia of Dr. Germont and M. Loir, two representatives of M. Pasteur, concluded an arrangement with these scientists to conduct a series of experiments with a view to discover a means of cultivating or preserving the virus of Pleuro-pneumonia for the inoculation of cattle. A laboratory was fully equipped for them, and they were provided with as many calves as the necessity of the experiment required. Yesterday a number of representative cattle-owners and medical gentlemen, with the Government Veterinarian, Mr. James Irving, M.R.C.V.S., attended, by invitation of the Board appointed for the purpose, to witness the results of the experiments so far as they have been proceeded with, and I enclose for your information, or for publication if you deem that desirable, a report of the proceedings from the *Brisbane Courier* of to-day.*

In Great Britain the virtue of inoculation as a preventive of Pleuro-pneumonia appears still to be an open question. In Australia, on the contrary, twenty-seven years' experience of the practice has convinced cattle-owners of its efficacy, and an Australian cattle-owner who disbelieves in it is now a *rara avis*.

The difficulty hitherto has been that cattle-owners could not secure a supply of virus with which to inoculate until the disease had actually reached their herds or the borders of their runs. The experiments of Dr. Germont

* This appears in the Journal for this month.

and M. Loir have demonstrated the fact that a constant supply of pure lymph can now be kept up ; that a few drops can be sent by post, in a sterilised hermetically sealed tube, to the uttermost part of the colony. This quantity injected into a calf or calves, under the skin behind the shoulder, will provide sufficient pure lymph to inoculate a whole herd.

Brisbane, *March 9th.*

P. R. GORDON,
Chief Inspector of Stock, Queensland.

The following letter refers to a summary of these experiments in Queensland :—

DEAR SIR,—I enclose you, for insertion in the Journal, copy of a letter published in last week's *North British Agriculturist*. I do so in the belief that it will be of some interest to those members of our profession who know, or desire to know, something of the practice of inoculation, and as a reminder to others that our knowledge of the subject is not by any means exhausted. In view of the action of the Government of this country, as compared with that of the comparatively young colony of Queensland, I cannot help thinking that our colonial friends, in carrying out these and other experiments, have scored, and that it would well become certain individuals to devote some of their spare energy to a little work of the same kind. We want less talk.

Yours faithfully,

Edinburgh, *May 6th.*

R. RUTHERFORD, F.R.C.V.S.

BLOODLESS FISH AND FLESH.

SIR,—I have already, in the *Morning Post*, shown the advantages of bleeding fish immediately after capture, and with the hope of interesting some of your readers, I will now also show its necessity for meat and poultry. The earliest of naturalists and the founder of sanitary science was probably the divine, humane, and far-seeing Moses, who insisted that all animals should be so killed that their flesh should contain practically no blood. Upwards of 2,000 years ago the Jews had recognised that domestic food animals had their chief diseases situated in their lungs, or the Lung Consumption of modern times. The early Jewish rabbis, following the preaching, precept, and practice of Moses, were true friends and lovers of animals. I believe I am right in saying that although the Old Testament frequently alludes to man's duties and responsibilities towards animals, the New Testament omits this subject. The Buddhists are not allowed to kill fish, though their priests have always been specially fond of a fish diet. Apparently one of the oldest Jewish institutions has been their clerical veterinary practitioners, educated, humane, religious, good men, or *shochets*, whose duties included that of killing beasts and poultry, but who appear always to have ignored examining fish. They were specially enjoined to cause the animals for slaughter as little pain as possible ; hence their method of cutting the animal's throat with a long, sharp, unnotched knife illustrates how seriously every detail of their profession had been studiously considered, to avoid all possible prolongation of pain to the animal. These priestly veterinary experts were appointed absolutely to protect and preside over the immediate interests and health of their entire people, and not to make loopholes for the sale and distribution of unsound, unhealthy, diseased, or other improper food. They have considered and acted that every killed animal is unhealthy till its technical inspection and dissection after death shall have proved its goodness, as otherwise the carcase is forbidden to orthodox Jews.

Blood and other fluids found in cattle putrefying more rapidly than flesh, muscle, or fat, convinced Moses of the necessity to remove all blood. Modern science confirms this view by the microscope so frequently revealing

putrefactive germs, or bacteria, or microbes in the blood and internal fluids of fish, flesh, and fowl, whilst their muscles and fat may still be quite healthy. But if the blood has once become contaminated by these putrefactive germs it is likely to at once infect the sound flesh, muscle, and fat. Indeed, in preserving all animal substances it is advisable to keep them as dry as possible, which is the chief factor in curing, salting, or smoking fish or meat. Handling fish or meat tends always to accelerate and often to invite and start putrefaction. Hence, in the frozen meat trade, not alone is the carcass kept hard, frozen, and dry, but it is invariably covered with a stout sack or shirt, to prevent dirt by handling or other means injuring the meat. Hence fish, freshly captured and placed on their bellies upon the too-frequently filthy board at the bottom of the fishing-smack, will often have their bellies rotten whilst their sides and back remain comparatively sound. Other conditions and circumstances being equal, it is found that fish and flesh keep in proportion to the length, density, compactness, and hardness of the microscopic fibres which unite together in bundles to form the muscle. Fat, of course, keeps much longer good than muscle, whilst moisture, high temperatures, and exposure to the direct rays of the sun hasten decomposition. Over-driven cattle and fish drowned in the meshes of the nets, as well as all animals whose strength has been exhausted by the chase or previous privation or disease, are prone to decompose with increased rapidity. The same tendency to rapid putrefaction after death has been chronically observed by army doctors in troops who have died on the battle-field after long fasting, fatigue, and fighting.

In England the Jewish veterinary practitioners' or Shechita Board is now under the able presidency of the distinguished practical philanthropist Mr. Samuel Montagu, M.P., and its statistics show that about one-quarter of the animals slaughtered under its conscientious inspection are declared to be unfit for human food according to the strict doctrines of the orthodox Jews. This veterinary-priestly Jewish board affixes a seal on all sound healthy meat killed according to the Jewish ritual, which may be called its ecclesiastical and sanitary duty, whilst its financial part, which is used to support the synagogues, consists in levying a light tax of 8d. on the killed bullock, 6d. on a calf, 4d. on a sheep, and 3d. on each head of poultry. These are the prices for London, whereas in some country districts as much as 1d. a pound is put on their orthodox sanitary meat. Recently an eminent physician, Dr. Henry Behrend, has written an exhaustive treatise on diseases communicated to man by eating unhealthy animals. He shrewdly attributes much of the longevity, the general freedom of Jews from scrofula and consumption to the great care they bestowed upon the examination of their meat. Such causes, though not producing an immediate effect, yet by their accumulated transmission through innumerable generations eventually exercise a protective power, to which much of the indomitable physical endurance of the Jewish race may be perhaps derived.

The ancient Egyptians, though they appear to have salted and cured fish from their early history, yet, unlike the ancient Chinese, the Egyptians had not introduced fish farming into their sciences. Though Moses was well acquainted with the practical treatment of land animals, he does not seem to have had any opportunities to have made himself familiar with fish, and most of the learned rabbis seem also to have neglected some of the uses of sea and fresh-water fishes. Hence the orthodox Jews avoid eating the eel, which is a remarkably healthy fish, the usual constituent of mock turtle, and too often the chief ingredient of turtle soup. Equally unwisely Jews are forbidden to eat oysters.

After the Norwegians, probably the Jews are about the best judges of fish and how to cook it. Much of the excellence of their fried fish is due to the

trouble which the Jews take in selecting good oils. Scientifically, fried fish is especially healthy, as the muscles of fish rarely contain any appreciable fat or oil, which, as in the codfish and shark families, is almost exclusively confined to their livers—practically organic sponges saturated with oil.

Moses and his disciples the Talmudists appear all to have overlooked and omitted the forbidding of unbled fish, which is much more unhealthy than unbled meat. The conventional plan of boiling fish is fish spoiling, and the water in which such fish is cooked absorbs a large portion of the best nutriment of the food, and also extracts much of the delicate characteristic natural flavour of fish.—Yours, etc.,

J. LAWRENCE HAMILTON, M.R.C.S.

May 11th.

THE ANNUAL MEETING OF THE ROYAL COLLEGE.

SIR,—It is most cheering and gratifying to hear an encouraging word spoken of any of the members of Council, more especially so since it is spoken by one of the "troublesome members," and was applied to our worthy President at the late annual meeting. Much irrelevant matter is annually poured forth by these self-styled troublesome members and their coadjutors. Some of them do it in a turbulent and hostile manner. Nevertheless, they stimulate others, who have a more pacific and courteous habit of speech, to ventilate the subjects referred to in the annual report. It has occurred to me that if these discussions were conducted in a more kindly and amicable spirit, they would be more dignified, instructive, and useful. As it is, the spirit of antagonism and enmity seems to pervade the minds of those who attack the Council so severely and with so much injustice. It would seem that this feeling is allowed to dominate and exclude every other feeling, turning the annual meetings into a bear-garden rather than a gathering of scientific gentlemen, a scene on which every right-minded member who is loyal to the College, every well-wisher to his profession, looks upon more in sorrow than in anger, laments and condemns. I do not think there is a single member of Council who would wish to restrain discussion at the annual meeting, but would rather give every encouragement to it, and who would with pleasure listen to other members of the profession fully ventilating every subject which comes on the *tapis*. But in saying this it will be the desire of every well-regulated mind that the time of the meeting should be usefully occupied, not wasted, as it too often is, in personalities, in trying to incriminate members, and in stultifying the acts of others who have devoted their lives, their best energies, and even their fortunes, in endeavouring to serve their profession honestly and earnestly.

The 9th Clause.—This subject has been discussed *ad nauseam*, but I have heard no arguments against it of equal weight and importance with those in its favour. Its tendency is to elevate our profession. No argument has been used to controvert this fact. Its object is to create a desire, a necessity, in fact, to increased study, to acquire more and higher knowledge, and thus in each individual case by taking this higher degree the candidate raises himself to a higher level, and so far the Fellows cause our profession to become more respected and more useful. Surely no one will find fault with this. We fully and freely admit that there are numbers of members who have not become Fellows who are equal in every sense of the word with those who have taken the degree, and who, by doing so, have secured all the benefits and privileges it bestows. At the time the Charter containing the ninth clause was obtained, every member of the profession was solicited to give his opinion, every veterinary association throughout the land discussed it and gave a vote in its favour, and the Council anxiously and often considered the whole matter, and felt satisfied it was a wise and beneficial course to adopt.

The Dual Appointment.—This subject has been discussed *ad infinitum*, but no argument has yet been advanced to show that any man of education, intelligence, and experience is a less useful and valuable member of Council because he happens to be an Examiner; neither has it been proved that any man of education, intelligence, and experience is a less efficient Examiner because he is a member of Council. I know it from actual experience, that those Examiners who are members of Council are some of the best members we have. Most regular in their attendance, they take the greatest interest in every matter that comes before the Council; they spare neither trouble nor expense if they can only be of some service to their profession. Amongst them we have men of high intelligence, knowledge, and experience, men eminently qualified to justly gauge the students' efficiency, and who are incapable of doing an injustice to the student.

There is another way which might be adopted with these two irrepressible subjects, viz., let the troublesome members get another Charter containing the various clauses they, in their profound wisdom, see are required; then get themselves elected members of Council or Examiners. When this is accomplished all blustering rowdyism will be a thing of the past, and no one would have the audacity to ever whisper that either the Council or Examining Board was not perfect.

Last year the members of the whole profession spoke with a voice which was irresistible and unmistakable; they gave those candidates whom they knew were in favour of the 9th clause and the dual office a greater number of votes than was ever awarded to any members of our profession; and this year the same spirit and same principle prevailed—the two candidates holding the dual appointment and in favour of the 9th clause were re-elected; and it is no secret that had other candidates presented themselves occupying the same positions they would have been equally successful. As it was, one of the candidates, who is an Examiner, and who is a strong advocate of the 9th clause, had the highest number of votes recorded for him next to the successful candidates.

Manchester, May 17th.

THOMAS GREAVES, F.R.C.V.S.

PRACTICE *versus* THEORY.

DEAR SIR,—I intend to relate an incident that lately happened, and allow others to moralise, as I am not much that way inclined. Scene: A horse-dealer's yard, the proprietor, his head man, nagsman, and grooms, engaged in their usual morning's work, exercising, cleaning, etc., etc. In walks an individual with high hat, cuffs, very broad-bottomed continuations, and general "get-up" by no means "horsey." Informing the dealer that he was a veterinary surgeon, and that he desired to purchase, for a client, a hackney, he was shown several useful animals of that class. Myself happening now to come along, for the purpose of treating a sick one, I could not avoid noticing the peculiar performances of the gentleman in black. First, he would endeavour to handle the hocks of the animal. Then he would pat, and talk in the most endearing manner to the hack. I am not first class in my descriptive powers, but I must say that he much amused me. But when I subsequently learned that he was a member of R.C.V.S. my amusement was ended and disgust set in. The technical terms he used were lengthy, but he admitted that he did not know a snaffle from a curb bridle. I could enumerate several other instances of a similar character, where the manner of the gentlemen referred to has been somewhat peculiar, some might be inclined to say effeminate, showing *most clearly* by the "weak-kneed," undecided, and nervous manner in which they *endeavoured* to examine their horses, that they were certainly not "born horsemen," but rather that they would be "more at home" probably

in a discussion with their sisters or mammas about the merits or demerits of an infusion of tea. There is one thing *quite certain*, they never themselves examined many horses as to soundness. Horsemen, as a rule, notice these things, and sometimes make some sarcastic remarks. Manipulative skill and self-confidence are seldom acquired by hearing lectures. Like morality, *the earlier* they are taught the better. It is impossible for any one to entertain greater regard and respect for horses and dogs than myself, yet I fail to see the cruelty in my suggestion, viz., to allow veterinary students to operate—*i.e.*, the general every-day operations—upon condemned animals in the large knackers' yards of the metropolis. When a student at St. Pancras I attended these yards at night. Many and many a night I watched the slaughterer open and dissect the poor worn-out animals from the streets of London. Most interesting and instructive nights! A large number of these animals have chronic enlargements, and many of them peculiar internal ailments. Rasping the teeth, firing dead legs, tracheotomy, passing the catheter, trephining, etc., etc., are all minor operations which surely could do no harm, and not be so very painful to the animal so soon to die. I believe there are some legal restrictions as to the treatment of animals while in the hands of the knacker, but what they are I do not exactly know. Let a man be ever so well versed in theory—he may even possess a ton of gold medals for his achievements in botany, chemistry, etc.—unless he can “go about a horse” as a horseman should, he will bring ridicule upon himself and the veterinary profession. I can call to mind several, ay, a great many, men with diplomas, and generally they are great and good talkers, who do not know the simplest details of their profession. They have not half as much liking for a horse as a sailor has for the ship he sails in. They would talk of anything rather than hunting and general matters pertaining to horses. In a word, there are many men *now* in the veterinary profession who have made a great mistake in selecting it. The veterinary surgeon, like the poet, must be born, not made. Let him make friends of his horses, and trouble less about *social* status.

“SNAFFLE BRIDLE.”

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from T. Hopkin, Manchester; R. Rutherford, Edinburgh; R. W. Burke, A.V.D., Curragh; J. Leather, Liverpool; A. B. Cottell, A.M.S., Chatham; A. Jones, 2nd Life Guards, London; P. R. Gordon, Queensland; D. E. Salmon, Washington; E. Nocard, Alfort, Paris; J. L. Hamilton, London; T. Greaves, Manchester; W. T. Greenhalgh, Leeds; J. Armstrong, Perth; S. Villar, Harrow; R. Dawson, Great Clacton; L. H. Howard, Boston, U.S.A.; “Snaffle Bridle;” A. W. Hill, London.

BOOKS AND PAMPHLETS: *W. A. Conklin*, Report of the Central Park Menagerie; *D. E. Salmon*, Hog Cholera; its History, Nature, and Treatment; *St. Polansky and H. Schindelka*, Die Rhinoskopie und die Laryngoskopie au Pferden.

JOURNALS, ETC.: *Wochenschrift für Thierheilkunde und Viehzucht*; *Journal of the National Agricultural Society of Victoria*; *American Journal of Comparative Medicine and Surgery*; *North British Agriculturist*; *Giornale Veterinaria Militare*; *Journal of Medicine and Dosimetric Therapeutics*; *Lancet*; *Echo Vétérinaire*; *Recueil de Méd. Vétérinaire*; *British Medical Journal*; *Annales de Méd. Vétérinaire*; *Journal de Med. Vétérinaire*; *Revue Vétérinaire*; *American Veterinary Review*; *Medical Press and Circular*; *Der Thierarzt*; *Russian Journal of Veterinary Science*; *Oesterreichische Zeitschrift für Wissenschaftliche Veterinärkunde*; *American Live Stock Journal*; *Edinburgh Medical Journal*; *Live Stock Journal*.

NEWSPAPERS: *Surrey and Hants News*; *Daily Chronicle*; *Brisbane Courier*; *Brisbane Telegraph*; *Naval and Military Gazette*.



